

HOW TO MAKE RATIONAL THE RELATIONSHIP BETWEEN LABOR EFFICIENCY AND WAGES GROWTH

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ABSTRACT

The article describes a methodical approach to justification of the ratio of growth in labor productivity and wages of transport organizations, depending on the type of development of the organization and the main factors of production (intensive and extensive) that ensure the growth of labor productivity. At the

same time, general tendencies are taken into account for the country's economy and transport complex, and against their background, the development features and innovative potential of enterprises of inland water transport are assessed. The author puts forward own approaches to economic calculations and factor analysis.

Keywords: economy, transport complex, inland water transport, labor productivity, wages, methodical approach, intensive and extensive factors, dynamics of growth.

Background. The relevance of the article is due to the fact that identification of labor productivity resources in transport is of particular importance today. After all, the growth of labor productivity in most enterprises of the industry in the country is very small, and in some of them, a decrease in this indicator is observed in comparison with previous periods [6]. Dynamics of labor productivity indices across Russia by sectors Transport and communication in 2003–2015 is shown in Pic. 1 [11]. The index of productivity over the past five years has not increased [2] and the objective reasons for that are quite understandable.

Objective. The objective of the author is to consider the relationship between labor efficiency and wages growth.

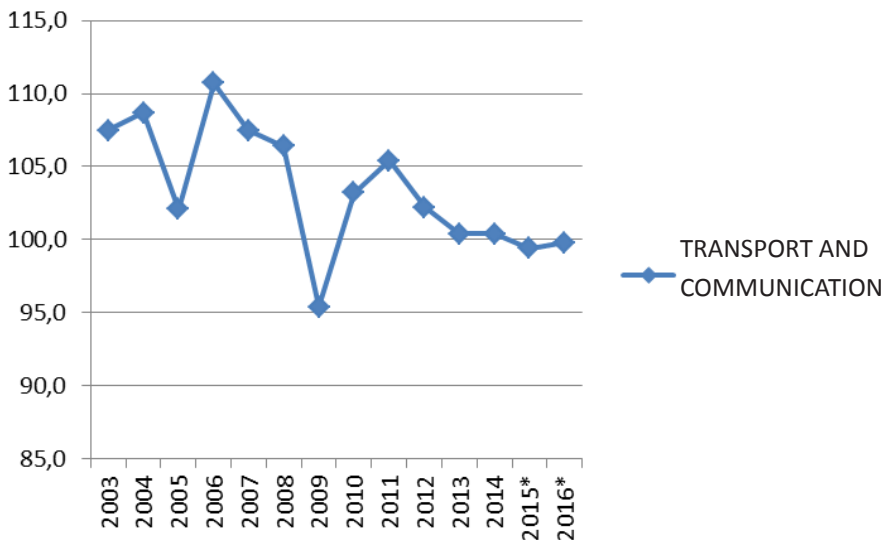
Methods. The author uses general scientific, statistical and economic methods, comparative analysis, mathematical apparatus, scientific description, evaluation approach.

Results. First, the country's economy for past 25 years was oriented towards the export of energy resources, insufficient attention was paid to the development of domestic production. Secondly, great hopes were placed on accession to the WTO, in particular, it was assumed that the country would be

«piled up» with cheap goods and services. Thirdly, excessive emphasis was placed on supporting the banking and financial sector. This can be seen at least from the fact that the government's anti-crisis program envisaged allocating more than 1 trillion rubles for the needs of this sector, many times more than for any other strategic sector of the economy [9].

Today, the task is to increase labor productivity by 1,5 times by 2018 (compared to 2011). However, this indicator is not reached at this time, including on water transport. As the analysis of the dynamics of this indicator shows, it largely depends on the innovative activity of organizations and enterprises [11]. According to Rosstat [Federal Agency for Statistics], only 8–11% of them can be classified as innovative. First of all, these are large corporations, business centers, and most of the transport enterprises use worn-out fixed assets, with a service life significantly higher than the normative one [2].

According to the CRI EWT, productivity growth in inland water transport allows the release of more than 600 people from the fleet personnel, 150 port workers, increase the processing of cargo by 7,5 million tons, etc. But the factors accompanying such results are not used enough. Still, the growth rate of



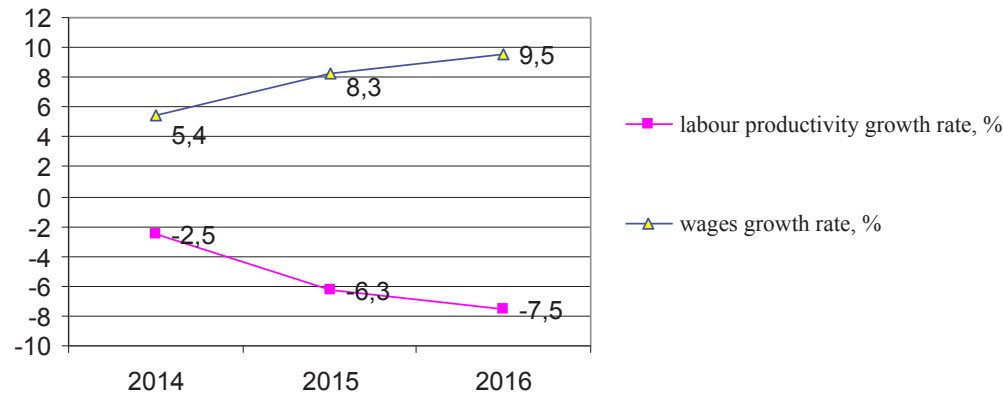
* Labor productivity indices for 2015–2016 will be updated after the revision of GDP estimates in 2018.

Pic. 1. Dynamics of labor productivity indices according to OKVED [Russian classifier of types of economic activities] in the group of transport and communication of the economy of the Russian Federation for 2003–2015.

Table 1

Indices of growth in labor productivity in the economy of the Russian Federation, transport complex and inland water transport in 2013–2016 years, %

Indicator level	2013 year	2014 year	2015 year	2016 year
Country's economy	102,2	100,7	97,8	99,8
Transport and communication	100,4	100,4	99,4	99,8
Water transport	100,5	98,7	97,7	–



Pic. 2. Dynamics of wages growth and labor productivity in transport organizations for 2014–2016, %.

wages outstrips the growth rates of labor productivity, this is proved by the fact that we «eat» faster than create.

From our point of view, the solution of this problem should be approached in a comprehensive manner. It is necessary: to clarify the methodology for calculating the labor productivity indicator with justification of the value of own production and taking into account the specifics of the enterprise's activity; identify factors that affect the level of labor productivity; develop a targeted program of innovative development of all modes of transport, in which growth in labor productivity should be provided through intensive development factors; increase employee motivation; when evaluating the effectiveness of developed programs, use a well-founded and clearly oriented criterion for the relationship between productivity growth and wage growth [10].

An analysis of the growth rates of labor productivity and wages of workers in transport organizations shows that at the present stage there is an urgent need to change the existing disproportions in this area. Pic. 2 shows the dynamics of wage growth and labor productivity in transport enterprises [1].

It should be noted that in economic theory there is no such method that would sufficiently scientifically allow us to establish the relationship of interest. The most common opinion is the unsubstantiated postulation of the necessary lag in the rate of growth of wages from the rate of increase in labor productivity. For example, with a planned economy (before 1990), it was recommended to raise wages by 0,6 % per every percent of productivity growth.

Presumably, the observed trend negatively affects the development and competitiveness of transport organizations. An outpacing increase in wages is associated with an increase in the cost of transport services, which can cause a loss of price competitive advantages and a lack of investment in development of enterprises as a result of a reduction in the funds that could be used to develop them.

To calculate the level of labor productivity in general for the economy of the country, the transport complex and individual modes of transport, it is recommended to use the labor productivity index, which is calculated as a quotient from dividing the physical volume of GDP and the index of changes in the number of employees:

$$J_{nm} = \frac{Jon}{Jemp}; Jon = \frac{On.an}{On.bas}; Jemp = \frac{Jemp.an}{Jemp.bas}, \quad (1)$$

where J_{nm} – labor productivity index; Jon , $Jemp$ – indices of changes in the volume of work and the number of employees; $On.an$, $On.bas$ – average annual number of employees in the analyzed and reporting periods; $Jemp.an$, $Jemp.bas$ – average annual number of employees in the analyzed and reporting periods.

Indices of labor productivity growth in the economy as a whole, transport complex and inland water transport are given in Table 1 [1].

Labor productivity in transport is the quantity of transport products (usually in conditionally-natural terms), which is an average per one employee engaged in transportation for a certain period. It is calculated as the ratio of the value of the reduced transport output to the average number of employees engaged in transportation. Differences in the levels of productivity of labor in certain modes of transport are due to differences in technical equipment, the nature of transport, and the methodology for determining the indicators of the number of employees engaged in transportation. The level of labor productivity can also be measured by the amount of income from transportation activities, calculated on average, per employee engaged in transportation [2].

The dynamics of the labor productivity index observed in the Russian Federation in 2013–2016 combined with the persistence of a low level of labor productivity is a very dangerous phenomenon – both in terms of sustainable economic growth, formation of a competitive economy, improvement of the level



Table 2

Average monthly accrued wages in the transport complex as a whole, in inland water transport and air transport for January–September 2015/2016 by federal districts

Indicator level	Central Federal District			North-Western Federal District			Southern Federal District			North-Caucasian Federal District		
	Average accrued wages		%	Average accrued wages		%	Average accrued wages		%	Average accrued wages		%
	Jan. – Sep. 2015	Jan. – Sep. 2016		Jan. – Sep. 2015	Jan. – Sep. 2016		Jan. – Sep. 2015	Jan. – Sep. 2016		Jan. – Sep. 2015	Jan. – Sep. 2016	
Average monthly wages in the transport complex as a whole	47563,6	50416,0	106,0	43690,1	46944,8	107,4	30623,0	33135,0	108,2	21322,3	23761,2	111,4
Inland water transport	32764,9	29690,3	90,6	28894,5	33464,6	115,8	30509,2	35513,4	116,4	—	—	—
Air transport	112177,8	112541,7	100,3	99773,6	100237,6	100,5	74386,1	70671,3	95,0	22730,5	24910,0	109,6
	Privolzhsky Federal District			Ural Federal District			Siberian Federal District			Far Eastern Federal District		
	Average accrued wages		%	Average accrued wages		%	Average accrued wages		%	Average accrued wages		%
	Jan. – Sep. 2015	Jan. – Sep. 2016		Jan. – Sep. 2015	Jan. – Sep. 2016		Jan. – Sep. 2015	Jan. – Sep. 2016		Jan. – Sep. 2015	Jan. – Sep. 2016	
Average monthly wages in the transport complex as a whole	28383,2	30015,0	105,7	43359,5	44453,0	102,5	36508,0	39181,6	107,3	50440,2	54696,7	108,4
Inland water transport	34703,0	36838,7	106,2	42970,3	41822,7	97,3	32918,4	32696,7	99,3	39912,9	42620,1	106,8
Air transport	67559,4	68659,3	101,6	86554,9	81050,0	93,6	67985,7	67142,4	98,8	77329,4	82424,2	106,6

and quality of life of population, as can be seen from the Table 1 [3]. At the same time, labor productivity issues are not subject to proper attention, nor is there a task for the federal executive body to develop a state policy to regulate labor productivity in the Russian Federation. The indicator of labor productivity is not included in the list of the main target indicators defined by the Strategy of Innovative Development of the Russian Federation for the period up to 2020 [7].

At the enterprises of inland water transport, the average monthly wage has a weak tendency to increase, but in absolute terms it is lower than the labor payment for the transport complex as a whole and for other modes of transport, as can be seen from Table 1. Table 2 shows the average monthly accrued wages (without payments of social character) for the transport complex in general, in inland water transport and air transport for January–September 2016 as compared to similar period of 2015 per federal districts [1].

The highest level of average monthly wages of inland water transport workers in 2016 was in Ural, Privolzhsky and Far Eastern federal districts, as can be seen from Table 2.

From our point of view, this ratio should be established taking into account the types of production development (depending on the intensive and extensive factors) [4]:

$$U_{ef} = \frac{Ef.an}{Ef.bas};$$

$$U_{res} = \frac{Kres.an}{Kres.bas}, \quad (2)$$

where U_{ef} , U_{res} – indices of growth of efficiency of production and growth of resource capacity of workers; $Ef.an$, $Ef.bas$ – efficiency of production in the analyzed and base periods; $Kres.an$, $Kres.bas$ – resource equipment of employees in the analyzed and base periods.

At the same time, the growth efficiency index U_{ef} is an intensive factor, and the growth index of the resource equipment of employees is an extensive factor in development of production.

The increase in production productivity will depend on combination of two types of factors: intensive ones due to the increase in production efficiency (U_{ef}) and extensive ones due to the growth of the resource equipment of labor (U_{res}):

$$U_{pt} = U_{ef} \cdot U_{res} \quad (3)$$

Taking into account the possible influence of these factors, it is possible to distinguish seven types of production development [5]:

- intensive, if $U_{pt} > 1$, $U_{ef} > 1$, $U_{res} = 1$;
- extensive, if $U_{pt} > 1$, $U_{ef} = 1$, $U_{res} > 1$;
- mixed, if $U_{pt} > 1$, $U_{ef} = 1$, $U_{res} > 1$;
- predominantly intensive, if $U_{pt} > 1$, $U_{ef} > U_{res} = 1$;
- predominantly extensive, if $U_{pt} > 1$, $U_{res} > U_{ef} = 1$;
- superintensive, if $U_{pt} > 1$, $U_{ef} > 1$, $U_{res} < 1$;
- superextensive, if $U_{pt} > 1$, $U_{ef} < 1$, $U_{res} > 1$.

In order to justify the ratio of the growth rates of labor productivity and wages, the following assumptions must be taken into account [12].

Wages are the most important target component of the company's expenses received when selling transport company services.

The expenses of the enterprise include: current costs per employee (C_{cc}), consisting of depreciation charges (C_{dc}), costs for consumed materials and

supply (raw materials, materials, semi-finished products) (Ccms), energy costs, taxes and payments to budgets different levels (Ctax), dividends on shares (Cdiv), that is, the cost of an enterprise per one average worker can be calculated by the formula:

$$C_{tot} = C_s + C_{dc} + C_{cms} + C_{tax} + C_{div} \quad (4)$$

where C_s – salary of an average worker, which varies in proportion to the growth of labor productivity, if the remaining items of expenditure (C_{dc} , C_{cms} , C_{tax} , C_{div}) change in the same proportion.

Proceeding from this, the ratio of the growth rates of wages and labor productivity, depending on the rates of development of production and the level of innovative development of the enterprise, will change as follows:

– for an intensive type $U_{ef} > 1$; $U_{res} = 1$; $U_{pt} = U_{ef} \cdot U_{res} > 1$; $U_s = U_{ef} = U_{pr}$, the growth rate of wages should be equal to the growth rates of labor productivity due to the growth of intensive factors, i. e. due to the growth rates of production efficiency;

– for an extensive type of development, $U_{ef} = 1$; $U_{res} < 1$; $U_{pt} > 1$; $U_s = U_{ef} = U_{pr}$, the growth rate of wages should be equal to the rates of increase in resource and labor productivity

– for a predominantly intensive, predominantly extensive and mixed type of development of production $U_{ef} > U_{res} > 1$, $U_{res} > U_{ef} > 1$, $U_s = U_{pr}$, $U_{pr} > 1$ the growth rates of expenses should be equal to the growth rates of labor productivity.

If the growth rates of current expenditures (C_c) lag behind or outstrip the growth rates of labor productivity, the wages of employees of transport enterprises will change accordingly with the lead or the lag in comparison with the growth of labor productivity. This should be provided that labor productivity is calculated on its own output without taking into account material costs [13].

The degree of increase (decrease) in the rate of growth (decrease) in the salary $K_{inc(dec)s}$ depending on the rate of change in material current costs, can be calculated according to the formula:

$$K_{inc(dec)s} = 1 \pm \frac{\Delta C_c}{C_{c.bas}} \quad (5)$$

where ΔC_c – increase (decrease) in material current costs in comparison with the corresponding growth rates of labor productivity; $C_{c.bas}$ – average annual salary of the employee in the base period.

General conclusion. When choosing the method of justification the ratio of growth rates of labor productivity and wage rates cannot be set equal in the whole for the transport complex. A deep analysis of intensive and extensive factors of production and constituent elements entering into the current material costs of each transport organization is needed to make the desired ratio rational.

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Article received 27.01.2018, revised 04.03.2018, accepted 07.03.2018.

