

DYNAMICS OF WORKING TIME EFFICIENCY (ON THE EXAMPLE OF THE BELARUSIAN ECONOMY)

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Abstract. *The relevance of the category "working time" is also associated with the fact that the working time itself and the time of rest are associated with such institutions as wages and labor rationing, workload, labor discipline, and labor protection. It is necessary to provide an economic and legal justification for the regulation and formation of tools for the use of working time, both on the part of employees and on the part of employers. Consequently, the object of scientific research in the study of working time processes are socio-economic and labor relations concerning the formation and use of working time. The dynamics of the efficiency of using working time in the national economy makes it possible to determine the prospects for the growth of socio-economic development from the quality and quantity of the resource of labor and time used.*

Keywords: *working time, labor resource, labor market, types of economic activities.*

Introduction. It is advisable to define the socio-economic and legal essence of working time as follows:

– First, from an economic point of view, working time is the period of the employee's participation in the creation of goods (services) intended for sale. In this case, working time is an indicator of the employer's use of the ability to work, which belongs to the employee. This is the time when labor is economically viable.

– Secondly, from a social point of view, working time is a border that does not allow spending all astronomical time on work, and in this sense, working time solves the problem of a person's realization in a social environment through the opportunity to realize his qualities and thus improve his position in the social structure.

– Thirdly, legally – working time is a norm that has legal boundaries, within which the employer has the right to demand the performance of labor duties, and also has the right to disciplinary action [1, p. 165]. Working time is a certain set of legal guarantees, norms, conditions (what is enshrined by law), which is an element of the labor obligation.

The modern labor legislation of Belarus interprets working hours as follows: a worker is considered to be the time during which an

employee, in accordance with labor, collective agreements, and internal labor regulations, is obliged to be at the workplace and to fulfill his labor duties [2; Art. 110]. This aspect of working time is subject to legal regulation. However, the legal concept of working time includes not only periods of direct performance by an employee of job duties, but also other periods included in working hours in accordance with applicable law. Consequently, working time also includes individual production losses, which are subject to economic regulation.

Thus, working time is the aggregate part of labor relations, which determines the working conditions and its organization based on the effective norms of working time.

From the standpoint of socio-economic costs, local (collective-contractual) norms and individual labor contracts make sense, which regulate and optimize the use of working time through the establishment of its norms and regimes. Local norms establish the minimum (maximum) norms for the duration of working hours, the main provisions on the procedure and methods of its distribution within a day, week or other calendar period, on the prohibition as a general rule of work outside working hours and the procedure for engaging in work in exceptional cases in excess of

the established working hours, on weekends and holidays, as well as issues that are resolved by local regulations and by agreement between the employee and the employer.

The legal force of local regulations is the economic basis for regulating the cost of working time and costs associated with payment of hours worked.

The economic essence of working time as the basis for the formation of social and labor costs was substantiated by K. Marx [3], emphasizing that the amount of labor expended in the same period of time may be different depending on its intensity. This is the basis for the formation of labor productivity and the reserve for its growth.

From the standpoint of social and labor costs, working time is the length of the period during which the employee must perform his work load. This position requires a clear quantitative account of the volume of the employee's workload.

Thus, taking into account the methodological and economic essence of working time, several provisions should be proposed regarding its use as a factor in the formation of social and labor costs.

1. Regulation of the use of working hours allows you to increase or decrease the number of jobs by manipulating the duration of work at the workplace, combining work.

2. Flexible work schedules and working hours allow you to optimize it both in the interests of employers and in the interests of employees.

3. Optimized use of working time, reducing the cost of accounting and monitoring, contributes to the intensive development of the organization. For such a use of working time, a high-quality labor force is needed, with formed specific characteristics of human capital.

4. As a measure to maintain the competitiveness of the organization, it is advisable to reduce labor costs by abolishing prohibitions on temporary and part-time employment, to reduce the list of professions in which it is prohibited to use labor on an "irregular" or temporary basis. "Irregular" workers tend to have temporary contracts, do not receive social security payments from the company, and their income is on average one third of regu-

lar ("regular") workers. Workweeks and working hours per year are significantly lower for "irregular" workers than for "regular" workers. This use of working time is costless.

The relevance of assessments of the use of the resource of working time is associated with measuring the dynamics and structural analysis of the worked time, productivity and economic efficiency in using the resource of labor through the resource of time. This is a determining factor in the overall production efficiency. The efficient use of the time resource allows the formation of an economically feasible number of employed workers in the national economy.

An important indicator that characterizes the efficiency of using the labor resource is the time worked. It seems that the assessment of the worked time worked, the identification of its losses during the period of employment at the workplace, will reveal the potential for growth in the efficiency of using working time and employment of workers.

Methodology and methods of possible research of working time in the Belarusian economy

It is possible to identify these parameters of efficiency using a set of tools that explain the relationship between working time and changes in gross value added, the number of employees and wages [4-7] both in the economy as a whole and by types of economic activity.

As part of the search for an acceptable methodology, it is important to decide on the tools for forming a statistical database on the worked hours. The task is to use comparable indicators of the dynamics of the number of employees, the volume of actually worked hours, and the level of wages. Thus, statistics on the actual worked hours are presented in the "Statistical Yearbook of the Republic of Belarus" in the statistical collection "Labor and Employment in the Republic of Belarus". Separate information for monitoring working hours is presented in the collections "Industry of the Republic of Belarus" and "Social situation and standard of living of the population of the Republic of Belarus". More detailed calculations and methods for determining the amount of working time planned for a calendar year are presented in the annual produc-

tion calendars of the Republic of Belarus. However, in comparison with the statistical base for the worked and planned working hours for the calendar year, the Belarusian statistical base appears to be very "scarce" in comparison with the Russian data. In this regard, this study had at its disposal only the slice of official data that is presented in the state statistical information. The main problem of national statistics on working hours is its absence for all types of economic activity in Belarus.

The national statistics of Belarus lacks any data on the number of jobs in types of work by type of economic activity, in contrast to Russian statistics, where such data are presented, albeit not in full, but only for those areas of activity for which labor productivity indices are calculated.

Statistical processing of the research results was carried out using the Data Analysis module of Microsoft Excel using the methods of variation statistics. For a quantitative assessment of the statistical relationship of the studied indicators, the methods of correlation and regression analysis were used.

Analysis and evaluation of the efficiency of using working time in Belarus

General analysis of observations of the number of hours worked in the national economy of Belarus for the period 2010-2018 in-

dicates a sharp decline in this number in 2012 and 2013. According to the production calendars of the Republic of Belarus, such a "subsidence" of the schedule in terms of the number of hours worked is due to a change in the number of working and non-working days. By 2016, the total number of working hours in the Belarusian economy increased and became equal to 2010. So, the economy of Belarus at this stage has an annual fund of working hours in the amount of 2038 hours.

Aggregation of data on the planned fund of working time (production calendars of the Republic of Belarus) within months and quarters showed that the most costly in terms of the volume of working time use are the autumn months (183-185 h / month). Less time-consuming is January-February.

The main economic parameter (economic dependence) that assesses the degree of efficiency of the worked time worked and paid labor efforts at this time is the dependence between the worked time worked and the wage fund, which is a price characteristic of labor time. Figure 1 shows the results of a correlation assessment (period 2010-2016) based on data from the National Statistical Committee of the Republic of Belarus, including data on the wage bill (wage bill) and the number of hours worked for all types of economic activity.

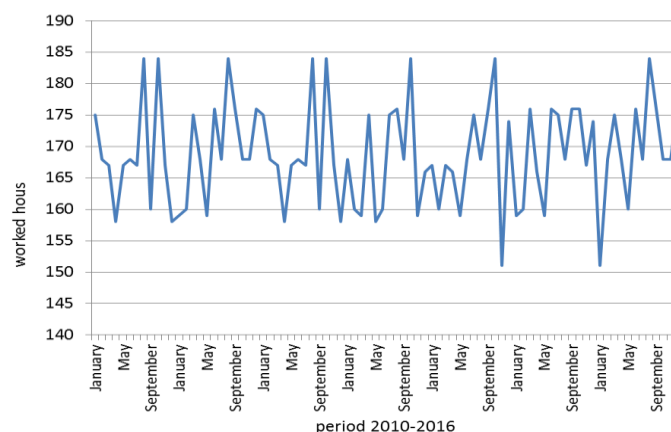


Fig. 1. Dynamics of changes in working hours by months

Assessment methodology. Working hours worked is the product of the average actually worked working hours per employee by the number of economic jobs (a job that provides employment to one employee). FZP is pre-

sented as the product of the nominally accrued wages and the number of workers employed in the economy. The FZP is presented in dollar terms (at the rate of the National

Bank of the Republic of Belarus as of 01.01. Of the analyzed year) [10].

Among Russian scientists [4], there is a hypothesis that there is a close relationship between the hours worked and the indicator of the economic efficiency of labor. This hypothesis is tested and evaluated based on Russian data. The methodological basis of this idea is the indicator of the economic efficiency of labor, which is calculated as the ratio of the volume of production (gross value added (GVA)) to the wage bill. Justification of the validity of such a hypothesis is associated with the fact that an increase in the price of labor, i.e. an increase in wages encourages the employee, other things being equal, to spend more time to carry out his work. However, it

is known that there is a certain limit in the ratio of working and free time, when upon reaching a certain level of wages, its further increase ceases to be a motive for the employee to increase the duration of his working time. Thus, the function connecting the hours worked and the economic efficiency of labor should be convex upward and have an extremum. This position was proved by V.V. Kuzmin and S.G. Kuznetsov [4].

An attempt was made to make similar estimates using data on the national economy of Belarus. The calculation of the indicator of the economic efficiency of labor for the country's economy as a whole is made. The relationship with worked hours worked is as follows) (fig. 2.)

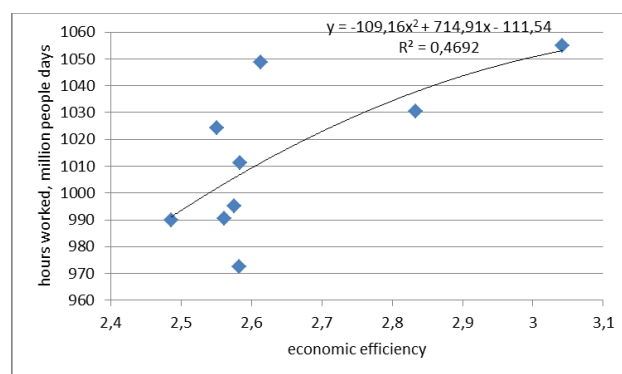


Fig. 2. Equation of economic efficiency of working time in Belarus

Calculation data using Belarusian data confirm the above hypothesis. The relationship equation is a parabola, which already has an extremum within the observed values. The equation is statistically significant ($R^2 = 0.47$, $F = 6.7$, $p < 0.05$).

To confirm the adequacy of this hypothesis for the Belarusian economy, the calculation of efficiency coefficients was made for each industry, but the relationships had to be built separately, since the industries differ greatly in production technology and the amount of working time worked (Figure 2-5).

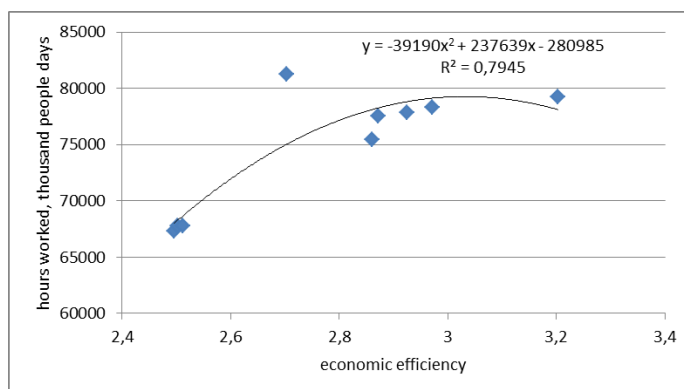


Fig 3. Economic efficiency of working time in Belarus ("Transport" industry)

* The equation is statistically significant ($R^2 = 0.79$, $F = 28.9$, $p < 0.05$).

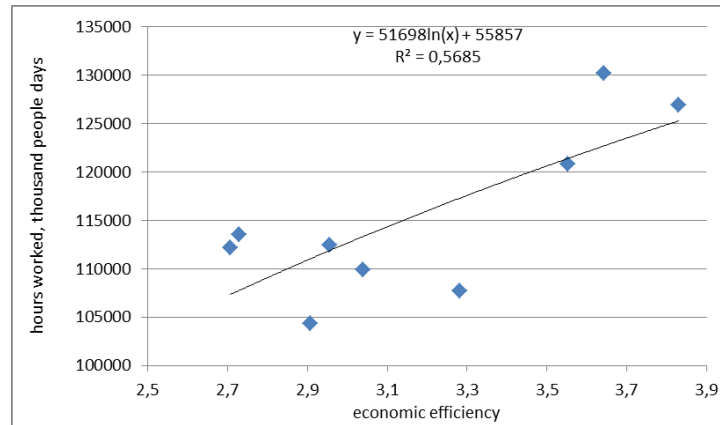


Fig. 4. Economic efficiency of working time in Belarus (branch "Agriculture")

* The equation is statistically significant ($R^2 = 0.56$, $F = 19.1$, $p < 0.05$).

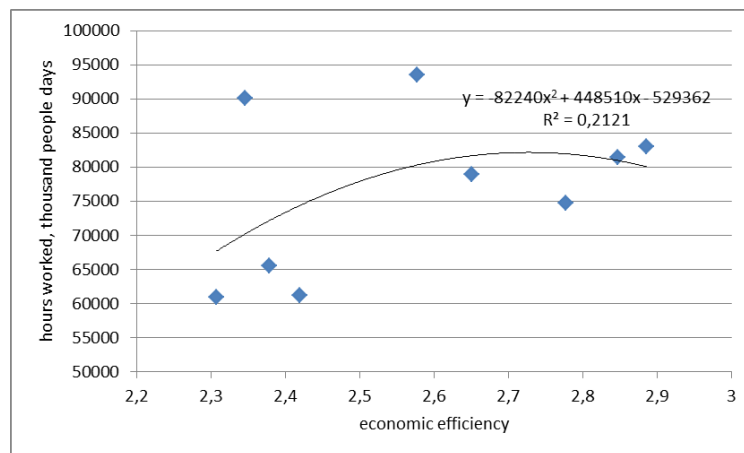


Fig. 5. Economic efficiency of working time in Belarus ("Construction" industry)

* The equation is not statistically significant, only a similar trend is observed.

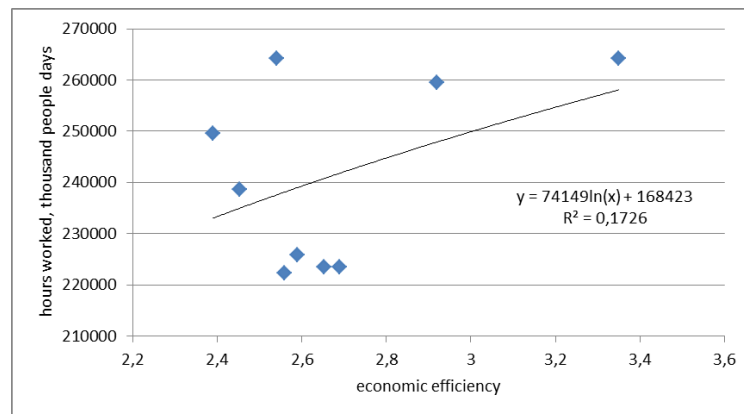


Fig. 6. Economic efficiency of working time in Belarus (industry "Industry")

* The equation is not statistically significant, there is a similar trend.

The general assessment of the hypothesis about the efficiency of using working time in the economy of Belarus allows us to draw the following conclusions:

– firstly, the curves on the charts look upwards and the extremum point can be determined. The resulting functions in general have a certain significance. This means that

for the studied types of economic activity in Belarus there is a value of the level of economic efficiency of labor, upon reaching which its further increase does not motivate the employee to increase the hours worked;

– secondly, from the point of view of practical orientation, the level of economic efficiency of labor can be considered as a certain

economic standard that provides a balance of hired and dismissed, the level of workload of workers during working hours, the establishment of the optimal (economically justified) number of employees [11].

Thus, the use of working time in industry seems to be ineffective. In other types of economic activity, a dependence has been established that indicates the inexpediency of over-spending of working time [10].

Table 1 presents the data of the National Statistical Committee of the Republic of Belarus for only 4 types of economic activity out of 17 possible. Lack of data for the other 13 species minimizes the degree of representa-

tiveness of the study. But national statistics provide data on the main (larger-scale) types of economic activity for the period 2010-2018. It is these data that will be the basis for analyzing the effectiveness of the worked hours. Table 2 presents statistical data on the number of economic jobs per year in the economy of the Republic of Belarus by type of economic activity, which is identical to the average number of people employed in the economy. Tables 1 and 2 provide a basis for a statistical assessment of the efficiency of the use of working time in the Belarusian economy.

Table 1. The number of actually worked hours per year in the economy of the Republic of Belarus by type of economic activity

Economic activities	Average for 1 employee days % to the previous year								
	2010	2011	2012	2013	2014	2015	2016	2017	2018
Industry	<u>223,3</u> 100	<u>222,3</u> 99,6	<u>221,8</u> 99,8	<u>218,2</u> 98,4	<u>216,4</u> 99,2	<u>212,7</u> 98,3	<u>216,5</u> 101,8	<u>218,3</u> 100,8	<u>219,5</u> 100,5
Building	<u>229,6</u> 100	<u>224,9</u> 98,0	<u>223,4</u> 99,3	<u>223,7</u> 100,1	<u>222,2</u> 99,3	<u>216,3</u> 97,3	<u>212,9</u> 94,8	<u>217,9</u> 102,3	<u>220,6</u> 101,2
Transport and communication	<u>231,9</u> 100	<u>230,2</u> 99,3	<u>229,5</u> 99,7	<u>227,0</u> 98,9	<u>227,1</u> 100,0	<u>225,9</u> 99,5	<u>226,6</u> 100,3	<u>226,7</u> 100,0	<u>227,3</u> 100,3
Agriculture and forestry	<u>264,5</u> 100	<u>264,2</u> 99,9	<u>263,5</u> 99,7	<u>262,0</u> 99,4	<u>261,1</u> 99,7	<u>258,5</u> 99,0	<u>258,6</u> 100,0	<u>258,5</u> 100,0	<u>257,6</u> 99,7

Table 2. The number of jobs (economic) per year in the economy of the Republic of Belarus by type of economic activity (the same is the average number of employees)

Economic activities	Thousand jobs % to the previous year								
	2010	2011	2012	2013	2014	2015	2016	2017	2018
Industry	<u>1182,9</u> 100	<u>1188,2</u> 100,4	<u>1170,2</u> 98,5	<u>1143,8</u> 97,7	<u>1102,4</u> 96,4	<u>1051,0</u> 95,3	<u>1027,1</u> 97,7	<u>1023,3</u> 99,6	<u>1028,6</u> 100,5
Building	<u>407,2</u> 100	<u>400,8</u> 98,4	<u>353,2</u> 88,1	<u>363,7</u> 103,0	<u>373,7</u> 102,7	<u>345,7</u> 92,5	<u>308</u> 89,1	<u>280,7</u> 91,1	<u>276,2</u> 98,4
Transport and communication	<u>350,3</u> 100	<u>344,1</u> 98,2	<u>341,3</u> 99,2	<u>342,8</u> 100,4	<u>341,5</u> 99,6	<u>333,9</u> 97,8	<u>297</u> 88,9	<u>299</u> 100,7	<u>298,1</u> 99,7
Agriculture and forestry	<u>492,2</u> 100	<u>480,2</u> 97,6	<u>458,5</u> 95,5	<u>433,4</u> 94,5	<u>430,7</u> 99,4	<u>434,0</u> 100,8	<u>425,1</u> 97,9	<u>416,6</u> 98,0	<u>404,9</u> 97,2

A statistical analysis of aggregated macro data on changes in the number of hours worked, the dynamics of the number of economic jobs and the level of nominal wages allows us to formulate the following conclusions:

– firstly, agriculture is the most costly type of economic activity in the use of the time resource in Belarus;

– secondly, compared to 2010, by 2018, Belarusian workers began to work less, as

evidenced by the reduction in hours worked by an average of 3-5 percentage points;

– thirdly, with the general trend towards a reduction in working hours worked, the level of nominal wages in the economy of Belarus increased by almost 3.5 times, while the number of economic jobs remains practically unchanged (2010-2018);

– fourthly, the formation of labor costs in the economy of Belarus does not occur in a market way (rather, by institutional methods),

since the reduction of one type of resource (time) is accompanied by the preservation of a labor resource for the use of which financial resources increase. This allows us to conclude that the time resource in the Belarusian economy (for the 4 main foreign economic activities) is not fully included in the cost accounting system as part of the costs that are ineffectively used.

The information presented in national statistics on the number of working hours worked only for several types of economic does not allow obtaining an objective idea of the efficiency of using working time. For this purpose, it is advisable to calculate the average labor productivity and its dynamics based on the indicator of gross value added in the studied types of activities. The calculation of labor productivity was carried out in two ways: the first using the indicator of working hours worked (man-days), the second using

the indicator of the number of employed workers in economic jobs [8-9].

These calculation results are presented in Belarusian rubles and demonstrate the same positive trend towards an increase in gross value added and labor productivity. The specificity is noticed in this type of economic activity as an industry and is associated with the fact that the main volume of gross value added falls on this type of activity, despite the fact that the level of labor productivity and the rate of its growth is identical to the average statistical values and is comparable with the studied types of activity.

Calculations showed that the level of productivity in the period from 2010 to 2018 for all activities was practically the same. Since 2013, this indicator (calculated in two ways) has become fundamentally different in these types of activities.

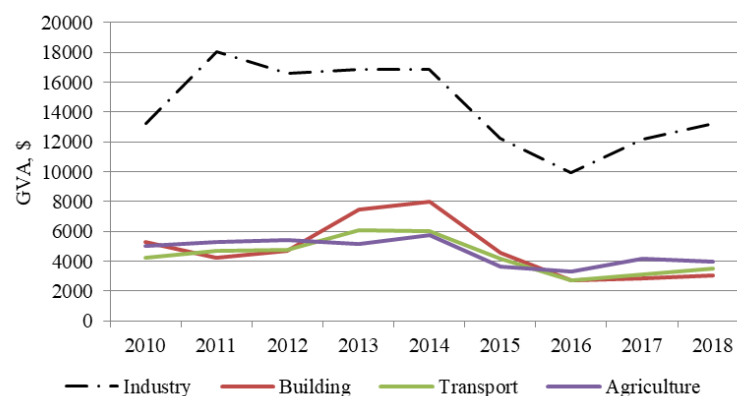


Fig. 7. Dynamics of gross value added, in dollars.

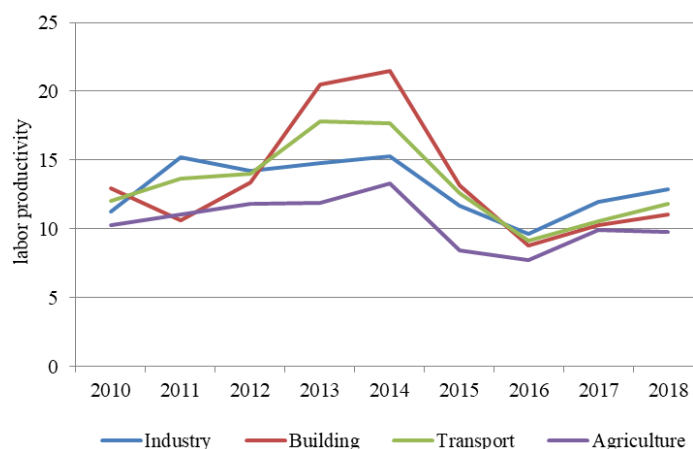


Fig. 8. Dynamics of labor productivity (GVA USD / person)

Other research results were obtained in the case of calculations that were made in dollar terms (Figures 7 and 8). As can be seen in the graphs in dollar terms, the trend in gross value added and labor productivity is rather negative. Positive dynamics was noted only in 2013-2014. and is associated with the growth of the Bel. ruble. Changes in gross value added do not show a high degree of elasticity, and labor productivity indicators are more elastic in this context.

Descriptive statistics indicate that the studied indicator and their values depend on the dollar exchange rate in the national economy.

Conclusion

1. The use of working time in industry seems to be ineffective. In other types of eco-

nomical activity, a dependence has been established that indicates the inexpediency of over-spending of working time.

2. The value of the economic efficiency of labor in European countries is low and rather stable. This indicator in Belarus is the lowest, but with positive dynamics. However, even with such dynamics, labor efficiency is difficult to compare with European countries.

3. It should be assumed that the ineffectiveness of the use of working time in Belarus is the activation of such processes in the labor market as: an increase in secondary employment of workers, a reduction in nominal wages equivalent to the dollar exchange rate, the preservation of unstressed labor standards, and, as a result, underload of workers.

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ДИНАМИКА ЭФФЕКТИВНОСТИ РАБОЧЕГО ВРЕМЕНИ (НА ПРИМЕРЕ БЕЛОРУССКОЙ ЭКОНОМИКИ)

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Аннотация. Актуальность категории «рабочее время» связана с тем, что само рабочее время и время отдыха связаны с такими институтами, как заработная плата и нормирование труда, загруженность, трудовая дисциплина, охрана труда. Необходимо предоставить экономическое и правовое обоснование регулирования и формирования инструментов использования рабочего времени как со стороны сотрудников, так и со стороны работодателей. Следовательно, объектом научных исследований при изучении процессов рабочего времени являются социально-экономические и трудовые отношения, касающиеся формирования и использования рабочего времени. Динамика эффективности использования рабочего времени в народном хозяйстве дает возможность определить перспективы роста социально-экономического развития по качеству и количеству используемых ресурсов труда и времени.

Ключевые слова: рабочее время, ресурс труда, рынок труда, виды экономической деятельности.