

## ALTERNATIVE INTERPRETATION OF CALCULATION OF THE UNIFIED TARIFF SCALE IN THE WAGE SYSTEM

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The main economic condition for improving the standard of living is to ensure the transition to high labour costs and, accordingly, to decent wages. The classical wage system requires the improvement of the basic principles due to the existing weak points: demotivating relation between the tariff coefficients; imperfect characteristic of the "staff category" when grading the tariff rates. The aim of the study is to substantiate the methodological approach to the construction of a unified tariff grid for economic activities. Using the methods of discriminant analysis, additive and multiplicative convolution, the method of calculation of the unified tariff grid by types of economic activity for the relevant stages is proposed: the method of calculation of the unified tariff scale by the types of economic activity in the following stages: calculation of the initial minimum salary for the first-rate worker as the basis for further determination of the fair remuneration, using the integral coefficient of the average monthly wage per hour worked; calculation of the optimal ratio between tariff rates with eleven percent increase in payment rates; taking into account the coefficient-stimulator of the level of professional competencies knowledge when grading the tariff rates. In results, we believe that the proposed method of regulation of the tariff system of remuneration will provide a socially fair principle of remuneration - corresponding to the level of professional knowledge of remuneration for labor, regardless of its area of application.

*Key words: integral coefficient, minimum wage, motivation, labor remuneration, tariff system, tariff rate.*

*JEL Codes: G00, J30, O15.*

### 1. Introduction

For the effective functioning it is necessary to all economic entities to choose such a behavior which will orient them in the environment of dynamic changes of the modern economy. Methods of organization of labor remuneration, as an instrument for

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the effective management of social and labor relations will motivate hired workers to achieve an effective increase in labor productivity and the results of economic activity. The socio-economic vector of the tariff system involves providing of the remuneration guarantee; an implementation of the principle of equal payment for equal work; a comprehensive differentiation of the main part of wages depending on the features that characterize the labor quality of the workers. "It has been proved there is a need to improve the procedure for establishing and approving a subsistence level at the level corresponding to actual needs of people, rather than to financial capabilities of the state" (Tyshchenko, Vyshnovetska, 2018). The remuneration tariff system significantly affects the material interest of employees, substantiating the necessity to improve the quality of professional abilities and level of competence to achieve more significant results of work. "Work incentives are significantly affected by eligibility rules and the amounts of benefits" (Galuscak, Pavel, 2012).

The modern theory of the organizing of a remuneration tariff system consolidates the following essence: any hired employee has the right to receive some guaranteed remuneration for the implementation of his abilities in the labor process (regardless of the scope of his work, level of qualification and results of work). State institutions indicate the lower limit of remuneration in the form of minimum wages, below which it is prohibited to pay for labor. In different countries, the level of minimum wages and wages taxation is differentiated and is determined by the resources of the country and depends, first of all, on the economic efficiency of the functioning of the economy, on the volume and dynamics of the national income growth, on the focus on the social partnership of the domestic state policy. In the other equal conditions, the more optimal this level is, the higher the level of socio-economic development of the country is and vice versa. Theoretical and methodological principles concerning the essence, methods of modeling and application of the remuneration tariff system are highlighted in the works of such scholars as Tyshchenko and Vyshnovetska (2018), Sychenko and Marenichenko (2018), Senaj and Vyskrabka (2015), Bruha (2011), which focus on different aspects of this scientific vector. However, in the current practice of organizing a remuneration tariff system, there is no methodology for building a unified tariff scale as an element of the remuneration tariff system. This creates certain theoretical and methodological barriers for the establishment of an effective mechanism for tariff regulation of remuneration in modern conditions of management.

"In Germany, we observe a 1.5% rise in real wages, as households gain almost the entire benefit of the decline in firms' labor costs. The most radical changes in the tax rates under review occur in Slovakia. Households' labor income tax rate rises by 8.1 p.p. and firms' labor cost tax rate increases by 0.4 p.p." (Senaj, Vyskrabka, 2015). The basic vector of the formation theory of a unified tariff scale, as a tool of the tariff system of remuneration, is the correlation between the level and the differentiation of wages of certain categories of workers and investments in human capital, that is, between actions that increase the qualifications and abilities, and correspondingly the productivity.

The purpose of the article is to substantiate the methodical approach to the formation of a unified tariff scale for the national system of labor remuneration by the types of economic activity.

In accordance with the Law of Ukraine “On Remuneration” (2018), the remuneration tariff system includes: tariff scales, tariff rates, salary schemes and professional standards (qualification characteristics). Remuneration tariff system is used while the distribution of works depending on their complexity, and of employees – depending on the qualifications and according to the rates of the tariff scale. It is the basis for the formation and differentiation of wages. Tariff scale (salary scheme) is formed based on the tariff rate of the worker of the first category and interqualification (inter-agency) ratios of the amounts of the tariff rates (salary) (VRU, 2018).

According to the mentioned system, there are distinguished four main types of unified tariff scales which are differentiated according to the branches of the economy:

- a tariff scale of eight categories, with a range of 1: 2,4 for the remuneration of workers of the main production of ferrous metallurgy enterprises;
- a tariff scale of eight categories, a range of 1: 2,01 - for the remuneration of workers engaged in responsible work at the enterprises of mechanical engineering, electrical engineering, electronic, radio engineering industry;
- a tariff scale of seven categories, in the range 1: 2.01 - for the remuneration of workers employed in the maintenance and repair of the main equipment of thermal and electric systems of nuclear, thermal and hydroelectric power stations;
- a tariff scale of six categories, a range of 1: 1,8 - for the remuneration of workers employed in all the other types of productions and works (Brich, 2006).

The calculation of each tariff scale indicating the minimum coefficients of the ratios of monthly tariff rates of first-category workers to the statutory minimum wage is regulated by inter-branch agreements, in agreement with the elective body of the primary trade union organization, which are certified by the Ministry of Economic Development and Trade, and their notified registration is conducted by the Ministry of Social Policy. “By restricting the (legal) incomes of workers below the statutory tariff, the minimum wage tends to increase the proportion of workers paid exactly at, or slightly over, its level” (Fialova, Mysikova, 2009).

## **2. Research methods**

In order to solve the mentioned scientific problem, we use the methods of discriminant analysis, constructing an integral index, which essence consists in the compact description of some quality of the phenomenon under study by preserving the basic properties of the structure of the objects under study. Separately, as components of this method, methods of using additive convolution are used, when each component linearly and additively affects the investigated quality of objects, and multiplicative convolution, when the basic indicators characterize the relative values (Grygoruk, Tkachenko, 2012).

Having analyzed the existing tariff scales within the tariff system of remuneration, the following disadvantages can be noted:

- binding of the salary of the 1st tariff category to the minimum wage creates a socially unfair situation for obtaining the same remuneration for labor regardless of the sphere of activity;

- the existing correlation between tariff coefficients does not allow to distinguish the value of the remuneration for labor between employees of different qualifications;

- the construction of tariff scales based on the principle of increasing of the remuneration for labor based on the staff categories starting from workers to managers leads to the stimulation of not the increasing of the productivity of personal work, but to the desire to get an appropriate post.

The importance of advanced methods of payroll in the modern small and medium-sized businesses and ensuring development of this area with application of mechanisms of state regulation are justified (Sychenko, 2018).

In our opinion, the main requirements for the organization of remuneration, which are in the interests of both the employee and employer, is a guarantee of increased remuneration for labor, which will be a motivating factor for each employee to increase the efficiency of the enterprise.

We propose an alternative interpretation of the algorithm for the calculation of a unified tariff scale for the national labor remuneration by the type of economic activity.

First, it is necessary to unify the calculation of the initial minimum salary for the 1st-category worker, which will be the basis for further determination of the fair amount of remuneration for labor separately for each type of economic activity of the national economy of the country. Differentiation of the basic level of remuneration by the types of economic activity will create a competitive environment in the labor market, which will upgrade the quality of staff and, as a result, increase the productivity. “This allow you to rank personality, communicative, innovative, social and corporate characteristics that have the greatest impact on the overall performance indicators of activity efficiency; contribution to development” (Sergienko, Morozova, Karpets, Babenko, 2018).

The calculation of the integral coefficient of the average monthly wage per hour worked is carried out using the method of using estimates based on statistical processing of data (SSSU, 2018) using the linear additive dependence of integral and weighted coefficients.

The simplified technique for constructing an integral coefficient has the following form:

1) Formation of the set of output characteristics of the phenomenon under study:

$$X_j = \{X_1 \dots X_{10}\}, \quad (1)$$

where  $X_j$  – coefficient-stimulator, the average value of the average monthly wage per hour worked by the types of economic activity for the period 2010-2017.

2) Formation of a attribute implemented on a certain set of objects:

$$O_i = \{O_1 \dots O_i\}, \quad (2)$$

where  $O_i$  – the type of economic activity of the national economy according to the classifier of economic activities [7].

3) Choice of weight coefficient values:

$$V_1 + V_2 \dots V_i = 1, \quad (3)$$

where  $V_i$  - coefficient of the indicator of the class of professional risk of production by the types of economic activity, as the relative value of the size of the unified social insurance tax in accordance with the classes of occupational risk of production [8].

4) In this study, an attribute  $X_j$  is called a stimulator (it has a monotonically increasing dependence of quality) if there is some value at the interval of change of the attribute that corresponds to the best quality of the object. In the case of the behavior of an attribute as a stimulator, the integral coefficient of the average monthly wage per hour worked will have the form:

$$Q_{ij} = V_i(Q_j), \quad (4)$$

where  $Q_j$  is calculated by the formula:

$$\tilde{X}_j = \begin{cases} \frac{X_j \text{ norm} - X_j}{X_j \text{ norm} - X_j \text{ min}'} \\ X_j \leq X_j \text{ norm} \\ 1, X_j < X_j \text{ norm} \end{cases}, \quad (5)$$

where:  $X_j \text{ norm}$  - limit (nominal) value of the attribute for which the highest quality occurs.

The final steps in the first stage of the proposed calculation are the definition of  $Z_i \text{ min}$ - the initial minimum salary for an employee of the  $i$ -th category as a basis for the further determination of the fair amount of remuneration for labor for each type of economic activity, using the formula:

$$Z_i \text{ min} = (\tilde{X}_j \times Z \text{ min}(\text{low})) + Z \text{ min}(\text{low}), \quad (6)$$

where  $Z \text{ min}(\text{low})$  - the statutory and guaranteed minimum wage.

### 3. Research results and discussion

The results of the study are the results of measuring a certain set of indicators on the objects of observation. The aforementioned mathematical tools allowed calculating the initial salary for a 1st-category employee for each type of economic activity, taking into account the dynamics of change in the average monthly wage per hour worked in the specified period and the required level of compulsory social insurance for each type of economic activity, presented in table 1.

Table 1. Results of the proposed methodology for calculating the basis for the formation of a unified tariff scale\*

| Types of economic activity  | $X_j$ , coefficient-stimulant, average value of the average monthly wage per hour worked by the types of economic activity for the period 2010-2017 | $V_i$ , coefficient of occupational risk class of the corresponding type of economic activity | $Q_{ij}$ , integral coefficient of the average monthly wage per hour worked | $Z_i$ min, the initial minimum salary for a 1st-category worker as a basis for further determination of the fair remuneration for labor, UAH |
|---|---|---|---|--|
| <b>Agriculture, Forestry and Fisheries</b>                        | <b>0.3063</b>   | <b>0.3719</b>   | <b>0.11392</b>  | <b>4147.1</b>  |
| Industry  | 0.6667  | 0.3739  | 0.24928   | 4651.1   |
| Construction  | 0.7516  | 0.3704  | 0.27839   | 4759.4   |
| Wholesale and retail trade; motor vehicles and motorcycles repair | 0.7144  | 0.3680  | 0.26288   | 4701.7   |
| Transport, warehousing, postal and courier activities             | 0.7617  | 0.3677  | 0.28008   | 4765.7   |
| Temporary placement and catering service                          | 0.9005  | 0.3680  | 0.33137   | 4956.7   |
| Information and telecommunications                                | 0.6567  | 0.3676  | 0.24141   | 4621.8   |
| Financial and insurance activities                                | 0.6569  | 0.3676  | 0.24148   | 4622.0   |
| Real estate operations  | 0.7105  | 0.3677  | 0.26124   | 4695.6   |
| Professional, scientific and technical activities                 | 0.7112  | 0.3677  | 0.26151   | 4696.6   |
| Activity in the field of administrative and auxiliary services    | 0.6367  | 0.3677  | 0.23410   | 4594.6   |
| Public administration and defense; compulsory social insurance    | 0.7781  | 0.3739  | 0.29095   | 4806.2   |
| Education   | 0.7110  | 0.3678  | 0.26152   | 4696.6   |
| Health care and social assistance                                 | 0.8405  | 0.3676  | 0.30896   | 4873.3   |
| Arts, sports, entertainment and recreation                        | 0.7350  | 0.3686  | 0.27093   | 4731.7   |
| Other types of service delivery                                   | 0.8247  | 0.3706  | 0.30564   | 4860.9   |

\* Source: calculated by authors (SSSU, 2018)

Secondly, it is necessary to achieve the optimal correlation between tariff categories as an increase of the stimulus factor in order to achieve the growth of labor productivity. To build a tariff scale, we will base on the eleven percent increase in payment rates, the coefficient of tariff categories ( $T_n = 0.11$ ), which is determined by the sociologists and is based on the lower bound of a sense of growth in material interest, which is a ten percent increase in wages (Antonchuk, 2012) .

Thirdly, the calculating of the tariff scale for the graduation of tariff categories must include the motivational factor for increasing the quality of qualification and professional abilities of employees regardless of the category of personnel. We propose, when calculating the official salary of the corresponding tariff category, to apply a coefficient-stimulator of the level of the professional competence ( $M_n$ ), which will serve as material support for the use of acquired knowledge for the employee. That is, the guaranteed portion of the remuneration for personal professional growth, which is included in the calculation of salaries and approved in normative regulatory acts, will stimulate on the one hand and demand constant improvement of the qualitative characteristics of the employees on the other hand.

$$\left. \begin{aligned}
 Z_1 \text{ min} &= (\tilde{X}_j \times Z \text{ min}(\text{low})) + Z \text{ min}(\text{low}) \\
 Z_2 \text{ min} &= (\tilde{X}_j \times Z \text{ min}(\text{low})) + Z \text{ min}(\text{low}) + (Z_1 \text{ min} \times T_n) + (Z_1 \text{ min} \times M_n) \\
 Z_3 \text{ min} &= (\tilde{X}_j \times Z \text{ min}(\text{low})) + Z \text{ min}(\text{low}) + (Z_2 \text{ min} \times T_n) + (Z_2 \text{ min} \times M_n) \\
 Z_4 \text{ min} &= (\tilde{X}_j \times Z \text{ min}(\text{low})) + Z \text{ min}(\text{low}) + (Z_3 \text{ min} \times T_n) + (Z_3 \text{ min} \times M_n) \\
 &\vdots \\
 &\vdots \\
 &\vdots \\
 &\vdots \\
 Z_{n_n} \text{ min} &= (\tilde{X}_j \times Z \text{ min}(\text{low})) + Z \text{ min}(\text{low}) + (Z_{n_n - 1} \text{ min} \times T_n) + (Z_{n_n - 1} \text{ min} \times M_n)
 \end{aligned} \right\}$$

Fig. 1. Alternative interpretation of the calculation of the unified tariff scale for the national system of remuneration of labor by the types of economic activity

\*Source: Built by authors

A generalized and schematically presented construction of the aforementioned concept of improving the regulation of the tariff system of remuneration is shown in Figure 1, where N is the number of tariff categories of the tariff scale, is determined by taking into account the possibilities of financial support of the remuneration of the subject of management.

In the practical application by the enterprises of various forms of management, the results of calculations obtained in the form of gradation of the initial minimum salary of an employee in determining the labor cost, calculation of wages, will serve as a basis for further determination of the fair remuneration for labor separately for each type of economic activity and the instrument of migration from paternalism to a social partnership between employer and hired workers.

#### **4. Conclusion**

We believe that the proposed method of regulation of the tariff system of remuneration on practice will provide:

1) a socially fair principle of remuneration - corresponding to the level of professional knowledge of remuneration for labor, regardless of its area of application;

2) social protection of employees, which are guaranteed by the employer to get the payment in the amount of the tariff rate (salary) of the corresponding category for the implementation of the standard of labor, its quantitative and qualitative parameters;

3) the dynamical feature of the size of the initial minimum salary for the 1st-category worker as the basis for further determination of the fair amount of remuneration for labor is calculated over a defined period of time, that is, it is a variable part and correlates with the performance indicators of the corresponding sphere of the economy.

4) the usage of the methodology for the calculation of a unified tariff scale may serve as a praxeological basis for the construction of separate sectoral tariff scales for individual enterprises and different categories of employees.

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## ALTERNATYVUS VIENINGOSIOS TARIFŲ SKALĖS DARBO UŽMOKESČIO SISTEMOJE AIŠKINIMAS

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### Santrauka

Pagrindinė ekonominė pragyvenimo lygio didinimo sąlyga yra perėjimo prie aukštos darbo jėgos kainos ir, atitinkamai, padorių atlyginimų užtikrinimas. Klasikinėje darbo užmokesčio sistemoje reikalaujama gerinti esminius principus atsižvelgiant į esamus trūkumus: motyvaciją mažinantį santykį tarp tarifų koeficientų; neoptimalų „personalo kategorijos“ apibūdinimą nustatant tarifus. Šiuo tyrimu siekiama pagrįsti vieningojo tarifų tinklelio, skirto ekonominėms veikloms, metodologiją. Pasiūlytas vieningojo tarifų tinklelio skaičiavimo pagal ekonominės veiklos rūšis atitinkamoms pakopoms metodas pasitelkus diskriminantų analizės, adityviosios ir multiplikacinės sąsūkos metodus. Pasiūlytas vieningosios tarifų skalės skaičiavimo metodas pagal ekonominės veiklos rūšis šiomis pakopomis: pradinio minimalaus darbo užmokesčio pirmojo lygio darbuotojui skaičiavimas kaip pagrindas tolesniam sąžiningo atlygio nustatymui, pasitelkus vidutinio mėnesinio darbo užmokesčio už dirbtą valandą integralinį koeficientą; optimalaus santykio tarp tarifų su mokėjimų normos padidėjimu vienuolika procentu skaičiavimas; profesinių kompetencijų, žinių lygio motyvacinio koeficiento įvertinimas graduojant tarifus. Atsižvelgę į rezultatus, straipsnio autoriai mano, kad siūlomas atlygio tarifų sistemos reguliavimo metodas užtikrins socialiniu požiūriu sąžiningą atlygio už darbą principą, atitinkantį profesinių žinių lygį, nepriklausomai nuo jo taikymo srities.

*Raktiniai žodžiai: integralinis koeficientas, minimalus darbo užmokestis, atlygis už darbą, tarifų sistema, tarifas.*

*JEL kodai: G00, J30, O15.*