УДК 640.2

Bril M. S.
PhD in Economics, Associate Professor, Department of Political Economy, S. Kuznets Kharkiv National Economic University, Kharkiv, Ukraine; e-mail:sup100.69@mail.ru
Pivavar I. V.
PhD in Economics, Associate Professor, Department of Political Economy, S. Kuznets Kharkiv National Economic University , Kharkiv, Ukraine
Ponomarenko O. O.
PhD in Economics, Associate Professor, Department of Political Economy, S. Kuznets Kharkiv National Economic University, Ukraine; e-mail:oleksandr.ponomarenko@m.hneu.edu.ua
Lesnaya I. F.
PhD in Economics, Associate Professor, Department of Political Economy, Simon Kuznets Kharkiv National Economic University, Ukraine; e-mail:lisnair@ukr.net
Morozova N. L.
PhD in Economics, Associate Professor, PhD in Economics, Associate Professor, educational–scientific institute of the Banking University, Kharkiv, Ukraine

THE METHODICAL APPROACH TO DETERMINE THE FEASIBILITY OF UTILITY TARIFFS FOR HEAT AND WATER SUPPLY AT THE MACROECONOMIC LEVEL

Abstract. This article is devoted to the peculiarities of state regulation of housing and utility services in Ukraine. The problems of housing and utility services are analyzed. The methods of state regulation to improve housing and utility services for the population at the regional level are proposed. HUS (Housing and Utility Services) development forms the qualitative position of human life largely. This industry tests the impact of developing market relations and, on the other hand, is an important part of social protection. As noted, one of the main priorities of Ukraine's economy in HUS sector is its social orientation, which creates serious social and economic problems and contradictions in the system of market relations. Thus the analysis of the current methodology for determining the utility tariffs has significant practical implications for the quality of population's life and its social protection.

Keywords: state regulation, housing and utility service , quality of life, utility enterprise , tariff policy, state management.

JEL Classification: L44, L97

Formulas: 6; fig.: 5, tabl.: 1, bibl.: 16

Бріль М. С.
к.е.н., доцент, кафедра політичної економії,
Харківський національний економічний університет ім. С. Кузнеця,
Харків, Україна; e-mail:sup100.69@mail.ru
Пивавар І. В.
к.е.н., доцент, кафедра політичної економії,
Харківський національний економічний університет ім. С. Кузнеця Харків, Україна
Пономаренко О. О.
к.е.н., доцент, кафедра політичної економії,
Харківський національний економічний університет ім. С. Кузнеця Харків, Україна
e-mail:oleksandr.ponomarenko@m.hneu.edu.ua
Лісна І. Ф.
к.е.н., доцент, кафедра політичної економії,
Харківський національний економічний університет ім. С. Кузнеця Харків, Україна; e-mail:lisnair@ukr.net
Морозова Н. Л.
к.е.н., доцент, кафедра банківської справи
Харківський навчально–науковий інститут Державного вищого навчального закладу «Університет банківської справи», Харків, Україна

МЕТОДИЧНИЙ ПІДХІД ДО ВИЗНАЧЕННЯ ОБҐРУНТОВАНОСТІ КОМУНАЛЬНИХ ТАРИФІВ НА ТЕПЛО ТА ВОДОПОСТАЧАННЯ НА МАКРОЕКОНОМІЧНОМУ РІВНІ

Анотація. Стаття присвячена особливостям державного регулювання сфери житлово–комунального господарства в Україні. Проведено аналіз проблем розвитку житлово–комунального комплексу. Запропоновано методи державного регулювання для підвищення ефективності житлово–комунального обслуговування населення на макроекономічному рівні. Розвиток ЖКГ в значній мірі формує якісне становище життєдіяльності людини. Ця галузь, випробовує вплив ринкових відносин, що розвиваються, з іншого боку є важливою ланкою системи соціального захисту населення. Як вже наголошувалось, одним з головних пріоритетів економіки України у сфері ЖКГ є її соціальна орієнтація, яка породжує серйозні соціально–економічні проблеми і суперечності в системі ринкових відносин. От же, аналіз діючої методики визначення комунальних тарифів має значне практичне значення для якості життя населення та його соціальної захищеності.

Ключові слова: державне регулювання, житлово–комунальне господарство, якість життя, комунальне підприємство, тарифна політика, державне управління.

Формул: 6; рис: 5; табл.: 1; бібл.: 16

Бриль М. С.
к.э.н., доцент, кафедра политической экономии,
Харьковский национальный экономический университет им. С. Кузнеца,
Харьков, Украина; e-mail:sup100.69@mail.ru
Пивавар И. В.
к.э.н., доцент,
кафедра политической экономии,
Харьковский национальный экономический университет им. С. Кузнеца, Харьков, Украина
Пономаренко А. А.
к.э.н., доцент, кафедра политической экономии,
Харьковский национальный экономический университет им. С. Кузнеца,
Харьков, Украина; e-mail:oleksandr.ponomarenko@m.hneu.edu.ua
Лесная И. Ф.
к.э.н., доцент, кафедра политической экономии,
Харьковский национальный экономический университет им. С. Кузнеца,
Харьков, Украина; e-mail:lisnair@ukr.net
Морозова Н. Л.
к.э.н., доцент, кафедра банковского дела,
Харьковский учебно–научный институт
Государственного высшего учебного заведения «Университет банковского дела»,
Харьков, Украина.

МЕТОДИЧЕСКИЙ ПОДХОД К ОПРЕДЕЛЕНИЮ ОБОСНОВАННОСТИ КОММУНАЛЬНЫХ ТАРИФОВ НА ТЕПЛО И ВОДОСНАБЖЕНИЕ НА МАКРОЭКОНОМИЧЕСКОМ УРОВНЕ

Аннотация. В статье рассмотрены особенности государственного регулирования сферы жилищно–коммунального хозяйства в Украине. Проведен анализ проблем развития жилищно–коммунального комплекса. Предложены методы государственного регулирования для повышения эффективности жилищно–коммунального обслуживания населения на макроэкономическом уровне. Развитие ЖКХ в значительной мере формирует качественную жизнедеятельность человека. Данная отрасль развивается в рыночных условиях а так же является важнейшим элементом системы социальной защиты населения. Как уже отмечалось, одним из основних приоритетов экономики Украины в сфере ЖКХ выступает социальная ориентация, в святи с этим существуют серьезные

социально–экономические проблемы и противоречия в системе рыночных отношений. Анализ действующей методики определения коммунальных тарифов имеет практическое значение для качества жизни населения и его социальной защиты.

Ключевые слова: государственное регулирование, жилищно–коммунальное хозяйство, качество жизни, коммунальное предприятие, тарифная политика, государственное управление.

Формул: 6; рис: 5; табл .: 1; библ.: 16

The problem statement. The housing and utility services (HUS) development forms the qualitative position of human activity largely. This industry tests the impact of developing market relations, and, on the other hand, is an important part of the system of social protection of population. As noted, one of the main priorities of Ukrainian economy in housing and utilities sector is its social orientation, which creates serious social and economic problems and contradictions in the system of market relations. Thus the analysis of current methodology for determining the utility tariffs has significant practical importance for the quality of population's life and its social protection.

The modern economic development of Ukraine is accompanied by inflation processes; one more lever of instability of utility tariffs is the fluctuation in energy prices, both in the domestic and foreign markets. But current and expected in future inflation processes the possible increase in the cost energy resources cannot be a ground for automatically raising utility tariffs. The local authorities should prevent the approval of economically unjustified tariff. Today the setting tariffs for heat supply, water supply and sanitation is completely in the hands of local authorities, which legally approve them and are personally responsible for them to the community.

Analysis of recent research and publications. The works of A. Amos, A. heed Dzezyk C., O. Zelinsky, Kachala T., I. Pyvavar V. Logvinenko, M. Figurine, G. Filyuk and others are devoted to the studies of problems of state regulation of monopolies activity in the current conditions. [1,2,3,6,7,11,14]. However the issues of emergence and functioning of the institute of natural monopolies of utility services sphere and improvement of methodological support of state regulation of Housing and Utility Services of Ukraine are insufficiently investigated in economic literature.

The research objective is the further development of theoretical and methodological support and development of practical recommendations for state regulation of housing and utility services to the population of Ukraine and determination of the validity of utility tariffs for heat and water.

The main results of investigation. For a long time the tariffs for housing and utility services for the population have been remained by the local authorities, which led to a deterioration in financial, economic and technical state the industry in whole as well as enterprises, which is characterized by a sharp increase in losses, increasing of receivables and payables.

The implementation of procedures for tariffs formation developed and approved by the Cabinet of Ministers of Ukraine allows to introduce a mechanism of calculation of economically justified tariffs based on state, branch norms and standards for housing and utility services for enterprises of all forms of ownership, provides the unified principles and methodological bases of tariffs formation, introduces the single classification of costs, which are included in the total cost of services for heating, water supply and drainage, prevents the inclusion of costs, which are not directly related to the provision of such services, to the tariffs.

In regional centers with the current seasonal tariff consumers pay for the heating services only during the heating season, when they actually receive the service of heat supply.

In the application of a single tariff for heat, payment is carried out by the consumers every month for a year (12 months). In the most regions of Ukraine the two–rate heat tariffs are introduced for the population. The two–rate tariff – is a tariff for heat, which consists of the annual cost of one unit servicing of attached heat load and the unit of consumed heat cost. The two–rate

tariff consists of two parts: the cost of services for servicing the unit of attached heat load; the cost of consumed heat [10].

The fee for unit service of attached heat load is paid by customer monthly during the year (12 months). These funds are directed for maintenance the sources of thermal energy, heating systems and heat using equipment in good working order by the enterprise (CHS, boiler, subscriber inputs, inner–house systems).

The fee for cost of consumed heat is paid by consumers only during heating season. It is the payment for actual consumed heat energy which is determined by the devices of the account (heat meter) or by the calculation method in line with its thermal load (in the case of meters heat absence). The funds for the cost of consumed heat are directed by the enterprise to pay for the fuel, consumed for heat production, energy spent in the heat transporting, payment for the purchase thermal energy and so on.

It should be noted that in the context of settlements there is a decrease of fluctuations in the value of tariffs for heat. The tariffs for water supply and sewerage in the context of settlements vary considerably primarily due to the local conditions of settlements providing with drinking water and wastewater drainage.

The current methodology of formation of utility tariffs led to the misbalance of its social orientation. According to the aggregated statistical data which were the basis of the analysis, we can conclude that there is no unique approach to the formation of tariffs for heat supply in Ukraine's regions, and also they do not include income levels, inflation and other relevant factors.

The disadvantages of the current order of setting tariffs for heating services is that the lack of a clear normative base creates a chaos in the formation of tariffs, it leads to the creation of preconditions for the decline of housing and utility companies in almost all areas. Only the informed usage of government regulatory measures in this area can promote coordination of tariffs with the general socio–economic situation of different areas. Consequently, there is an urgent need for state regulation of utilities to improve the quality of life in Ukraine and improve its social security.

The usage of economic–mathematical analysis methods is proposed in the work to determine the effect of tariffs rates indicators and income levels on the level of payments for services as its indicators.

In our opinion, the use of current existing domestic experience of setting and solution of various economic problems will allow to use the objective and meaningful approach to determining the dependencies and factors that affect the system of utilities setting tariffs.

Based on the detailed study of modern methods of state regulation of housing and utility the tools of methods of factor and regression analysis were used in the work for the investigation of the impact level of the indicators to the housing and utility services tariffs. Consider in more detail the theoretical basis of factor analysis methods [4].

The main tasks, which are solved by the various methods of factor analysis, including the method of principal components, are:

– Decreasing the information, transition from set of values for m elementary features of the volume of information $n*m$ to the limited set of elements of factor reflection matrix ($m*r$) and matrix of latent factors for each object of factor matrix display (t * r) matrix of values or latent factors for each object of the observation with dimension $n*r$, where $r < m$ typically;

– Principal component model is based on the logical assumption that the value of the set of interdependent characteristics generate the certain common result;

– Visualization of the structure of the studied phenomena and processes that enables to determine their condition and predict development;

– Identification of the object, i.e. the problem solving of pattern recognition;

– The benefits of their usage in the other statistical methods, mostly in correlation and regression analysis, cluster analysis, multidimensional scaling and others.

Methods of factor analysis in all their diversity have a common solution algorithm, which is shown in Fig. 1.

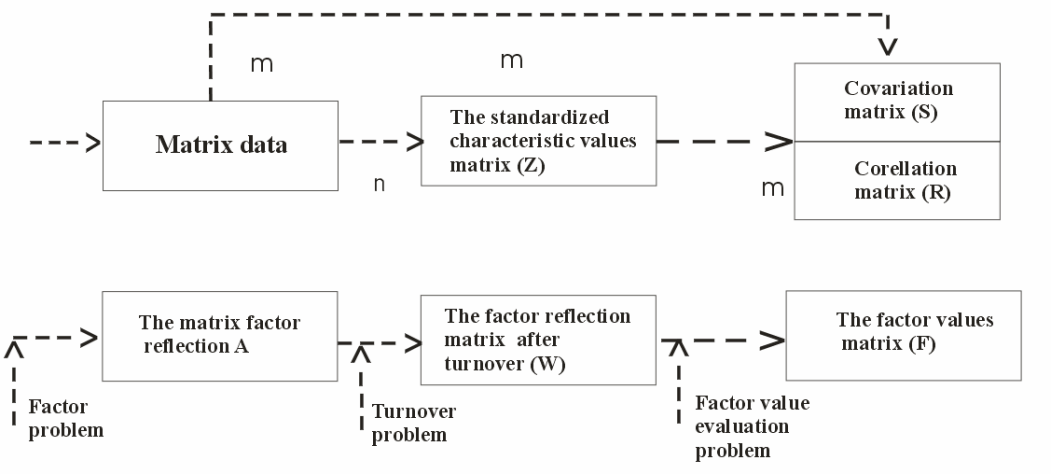

Fig. 1. Algorithmic scheme of realization of factor analysis methods [4], [5]

The application of the principal component method in the correlation and regression analysis also gives the certain advantages to the researcher.

Firstly, it becomes possible to significantly increase the number of elementary features involved in the analysis, on the condition of the introduction of only a small number of significant principal components in the regression.

However it doesn't complicate the model itself and also causes the reduction in the proportion of unexplained variance of response.

Secondly, the orthogonality of principal components prevents the effect of multicollinearity. The linear regression equation on principal components, on the condition of that the values of feedback (y) are measured in physical scale, is written as:

$$\hat{y}_F = \overline{y} + y_{i1} F_1 + y_{i2} F_2 + \ldots + y_{ir} F_r \ , \qquad (1)$$

$$\text{or } \hat{y}_F = \overline{y} + \sum_{k=1}^{r} y_{ik} F_k = \overline{y} + y F_r' \ , \qquad (2)$$

where $\overline{y}$ – the average value of the dependent variable as the evaluation of a free member equation;

y – vector of regression coefficients estimates at principal components

In constructing of the regression model question arises about the optimal composition of principal components. In practice, this recommended at first to obtain the model taking into account all m principal major components, then considering variations of reliability estimation of regression model and fluctuations of regression coefficients, the numbers of components can be reduced.

The insignificant principal components for regression were installed by the size of largest eigenvalues λ_κ or during the audit of regression parameters for t– or F–criteria:

$$t_H = \frac{|y_k| \sqrt{n * \lambda_k}}{\sigma_y} \ , \text{ where } t_{кр} = t_{\alpha/2,n-m-1}; \qquad (3)$$

$$F_H = \frac{\sigma_y^2}{y_k^2 * n * \lambda_k} \ , \text{ where } F_{кр} = F_{\alpha/2,n-m-1.} \qquad (4)$$

The component is excluded from the regression if the actual number λ_κ is least than 75 – 90% and simultaneously there is a little weight value of *k*–th component in shaping the result, or when the values of observed criteria *t* and *F* are low [4].

On the basis of conducted research of the problem regulation of tariff policy the main factors that affect the formation of housing and utility tariffs were discussed, analyzed and highlighted

Thus, the problem consists in the analysis of data and selection of the main factors that at most influence on the state of housing and utility tariffs, i.e. tariffs for heat and water. To investigate the factor space, forming tariffs for heating and water, we use the following baseline data for territorial units: average salary; current transfers; unemployment rate (% of the economically active population); part of networks needs to be replaced; the number of new condominiums; implementation of metering devices of consumption in the housing sector; debt for utility services (%); government subsidies and grants; the share of investment in HUS (%); recovery of basic production assets; inflation index (% of prev. month); index of prices of industrial production (% of prev. month).

The study of indicators of HUS of Ukraine found that government regulation of housing and utility services is determined by the expediency of decentralized management of tariffs. The paper presents a methodical approach to decentralized management of tariffs by two studied areas.

The obtained factor loads by HUS heat tariffs, which represent partial correlation coefficients, vary in the range [–1; 1], and therefore the value that tends to 1 means that the ratio (index) refers to certain factor, are presented in Fig. 2.

Variable	Factor Loadings (Quartimax raw) (Spreadsheet Extraction: Principal components (Marked loadings are > ,700000) Factor 1	Factor 2	Factor 3
X1	0,589103	0,810701	0,443757
X2	-0,741482	-0,051655	0,119315
X3	0,801198	-0,143993	-0,169114
X4	0,915999	0,037945	0,220662
X5	0,328900	0,142371	0,714232
X6	-0,029993	0,745172	0,134091
X7	-0,015550	-0,782299	0,184666
X8	-0,072525	-0,286776	0,710495
Expl.Var	2,492388	1,299541	1,355461
Prp.Totl	0,311549	0,162443	0,169433

Fig. 2. Matrix of factor loads by HUS heat tariffs

As shown in Fig. 2, the first factor features include the features X2, X3, X4, the second – X1, X6 and X7, the third – the X5 and X8, according to the corresponding values of factor loadings. Further analysis assumes determining the values of the principal factors i.e. we need to define a significance of the factors according to the obtained factor coefficients.

According the results of evaluation three factors were received, each of which had important features that is vital to the economic interpretation of the factor space.

The matrix of factor loadings on tariffs for water supply utilities is shown in Fig.3.

Variable	Factor Loadings (Varimax raw) (Spreadsheet46) Extraction: Principal components (Marked loadings are > ,700000) Factor 1	Factor 2	Factor 3	Factor 4
X1	0,962127	0,081697	0,047481	0,078296
X2	0,093787	0,244844	0,037466	0,722725
X3	-0,950594	0,058309	0,108644	0,071585
X4	-0,078184	-0,232361	0,018132	0,730750
X5	0,101569	0,102187	0,928124	0,026533
X6	-0,066081	-0,919069	-0,073812	-0,092386
X7	0,048530	-0,883460	0,158315	0,101656
X8	-0,320045	-0,322686	0,766410	0,011660
Expl.Var	1,963693	1,863772	1,495099	1,087291
Prp.Totl	0,245462	0,232972	0,186887	0,135911

Fig. 3. The matrix of factor loadings on tariffs for water supply of HUS

The value of factor loadings for the appropriate studied parameters reads as follows: the first factor include features X1, X3, the second – X6, X7, the third – X5, X8, and the fourth – X2 and X4, therefore according to the evaluation results the four significant factors were received which is necessary for qualitative economic interpretation of the factor space.

The aggregated results of the analysis based on the methods of factor analysis to determine factors affecting tariffs for heat and water are shown in Table. 1(the percentage of explanation of total variance factor and factor loads of each indicator are presented as % in brackets).

Table 1

The comparative table of factor analysis results

Sphere of HUS	Factors	Name of factors	Features which are included in factor	Name of feature
Tariffs for heat HUS	F1 (38,9%)	Factor of consumers	X2	Average salary (0,74)
			X3	Current transfers (0,8)
			X4	Unemployment rate (% of the economically active population) (0,92)
	F2 (17,1%)	Factor of infrastructure	X1	Part of networks needs to be replaced (0,81)
			X7	Implementation of metering devices of consumption in the housing sector (0,78)
			X6	Number of new condominiums (0,75)
	F3 (14,4%)	Factor of financial and economical state	X5	Debt for utility services (0,71)
			X8	Government subsidies and grants (0,71)
Tariffs of water supply HUS	F1 (24,5%)	Factor of infrastructure	X1	Part of networks needs to be replaced (0,96)
			X3	Implementation of metering devices of consumption in the housing sector (0,95)
	F2 (23,3%)	Factor of consumers	X6	Average salary (0,92)
			X7	Current transfers (0,88)
	F3 (18,7%)	Factor of investments	X5	Share of investment in HUS (0,93)
			X8	Recovery of basic production assets (0,77)
	F4 (13,6%)	Factor of market	X2	Inflation index (0,72)
			X4	Index of prices of industrial production (0,73)

Based on the obtained values of the main factors the regression model of impact of obtained factors on heat tariffs for the regions of Ukraine was built. The construction of model was made by the method of least squares in PPP STATISTICA, module «Multiple Regression» [12,15,16]. The results of multiple regression analysis is shown in Fig. 4, therefore, the constructed model has the following characteristics: the correlation coefficient (*Multiple* R = 0,9919) and shows the degree of linear relationship between factors; coefficient of determination (*Multiple* R? = 0,9838) – shows that 98% of changes in factor *Y* is explained by the change in factors F1, F2, F3, therefore the model is adequate; the adjusted coefficient of determination is (Adjusted R? = 0,9817); model significance by Fisher criterion is (*F(3,23)=465,16)*, $F_{розр} > F_{табл}$, model is considered as significant by the Fisher criterion.

	Regression results for depended variable:Y(Table 1) R–0,99185958 R2=0,98378542 Corrected R2=0,98167048 F(3,23)=465,16 p<0,0000 Standard Error value: 0,30578					
N=27	**Beta**	**Stantard Error Beta**	**B**	**Standard Error B**	**t(23)**	**R–level**
Free member			1,017602	0,062254	0,28275	0,779894
F1	–0,15859	0,030943	0,380455	0,074229	5,125543	0,000034
F2	–0,03027	0,026626	–0,07158	–0,071587	–4,13714	0,000085
F3	1,061546	0,030931	1,403333	0,040890	34,31958	0,000000

Fig. 4. The results of regression analysis model of influence factors on heat tariffs

Based on the obtained values of the main factors the regression model of impact of obtained factors on water supply tariffs for the regions of Ukraine was built.

The results of multiple regression analysis (parameters of the model and its characteristics) are shown in Fig. 5.

	Regression results for depended variable:Y(Table 2) R–0,93329075 R2=0,87103162 Corrected R2=0,84758283 F(4,22)=37,146 p<0,0000 Standard Error value: 0,4901					
N=27	**Beta**	**StantardError Beta**	**B**	**Standard Error B**	**t(23)**	**R–level**
Free member			1,130998	0,015600	72,4977	0,000000
F1	–0,80160	0,078467	–0,12322	0,012062	–10,215	0,000000
F2	0,053287	0,079012	0,007433	0,011021	4,6744	0,050707
F3	–037124	0,077270	–0,04454	0,009271	–4,8044	0,000085
F4	0,032767	0,077162	0,002821	0,006643	0,4246	0,675216

Fig. 5. The results of regression analysis model of influence factors on water tariffs

The constructed model has the following characteristics: the correlation coefficient (*Multiple R=0,9333)* and shows the degree of linear relationship between factors; coefficient of determination (*Multiple R?=0,8710*) – shows that 87% of changes in factor *Y* is explained by the change in factors F1, F2, F3,F4, therefore the model is adequate; the adjusted coefficient of determination is (*Adjusted R?=0,8476*); model significance by Fisher criterion is (*F(3,22)=37,146)*, $F_{розр} > F_{табл}$, model is considered as significant by the Fisher criterion. Parameters of the model are statistically significant by Student's criterion $t_{ai} > t_{табл.,}$ except factor F4, thus, the presented analysis confirms that a model is adequate and statistically significant, and thus it can be used for forecasting and qualitative description of the studied subject.

The regression models of dependency of tariffs for heating (*Y1*) and water supply (*Y2*) from factor characteristics are as follows:

$$Y1 = 0,017 – 0,3805*F1 – 0,0716*F2 + 1,4033*F3 \quad (5)$$

$$(R=0,99),\ (R^2=0,98)$$

$$Y2 = 1,13 – 0,123*F1 + 0,0074*F2 – 0,0445*F3 + 0,0028*F4 \quad (6)$$

$$(R=0,93),\ (R^2=0,87)$$

The coefficient of determination (R^2) shows that 98% of change in factor Y1 is explained by change of factors F1, F2, F3 for heating, and therefore, 87% of change in factor Y2 is explained by change in factors F1, F2, F3, F4 for water supply.

The conducted analysis shows that the constructed model is adequate. Statistical significance of constructed models is explained by the fact that the actual Fischer criterion is more than tabular one, factors are statistically significant by Student's criterion. Since the model error is less than 10%, it allows considering the results as accurate, which have very close connection between the components to determine the strength of influence. Thus, on the basis of this research it can be concluded that the formation of utility tariffs for heat and water supply the most influential factors are following: factor of infrastructure; factor of consumers (consumer market condition); presence of investments and current market situation; financial and economic situation of the service providers.

The conclusions. Thus, the models constructed in the article consider the results as accurate and have quite close connection between the components to determine the strength of influence. Thus, on the basis of this research it can be concluded that the formation of utility tariffs for heat and water supply the most influential factors are following: factor of infrastructure; factor of consumers (consumer market condition); presence of investments and current market situation; financial and economic situation of the service providers.

The methodical approach to determining utility tariffs for heat and water as the basis for the formation of quality of housing and utility services to the population, takes into account not only the infrastructure factors of formation the cost of service, but also the solvency of the population. It confirms the hypothesis that under inflationary development of Ukraine's economy one of the levers of utility tariffs instability is fluctuations in prices for resources. It was founded that the indicators of HUS level is a measure of the impact of tariff level and level of population income on the level payments for services. The price level and the amount of population income have actually the same influence on the population's services. Only the amount of expenses from the cost has important influence in shaping the cost of heat for the population.

So, it is necessary to establish the state regulation of utility tariffs for the population in administrative and territorial units, which takes into account the share of expenditure on housing and utility services in total population income and is correlated with the value of cover the expenses by consumers, which are mad by the HUS enterprises.

Literature

1. Амосов, О. Ю. Місце житлово–комунального господарства на ринку сфери послуг України [Текст] / О. Ю. Амосов // Бизнес–информ, – 2010. – № 11. –С. 32–38.
2. Бережна, А. Ю. Парадигма інноваційного розвитку комунального господарства міста в умовах глобалізації [Текст] / А. Ю. Бережна, Н. І. Склярук // Коммунальное хозяйство городов. – 2013. – Вип. 109. – С.232–246.
3. Дзезик, С. С. Державне регулювання природних монополій на локальних ринках комунальних послуг [Текст] : автореф. дис. ... канд. екон. наук / Дзезик С. С. ; Одес. держ. екон. ун–т. – Одеса, 2004. – 18 с.
4. Дубина, И. Н. Математико–статистические методы в эмпирических социально–экономических исследованиях [Текст] : учебн. пособие / И. Н. Дубина. – Москва : Финансы и статистика, ИНФРА–М. – 2010. – 416 с.
5. Дубров, А. М. Многомерные статистические методы [Текст] / А. М. Дубров, В. С. Мхитарян, Л. И. Трошин. – Москва : Финансы и статистика, 1998. – 350 с.
6. Зелінська, О. М. Державне регулювання монополізму в трансформаційній економіці України [Текст] : автореф. дис. ... канд. екон. наук : 08.00.03 / Зелінська О. М. ; Львів. нац. ун–т ім. І. Франка. – Львів, 2009. – 20 с.
7. Качала, Т. М. Житлово–комунальне господарство в системі міського комплексу [Текст] : [монографія] / Т. М. Качала ; Черкас. держ. технол. ун–т. – К. : Наук. думка, 2008. – 416 с.
8. Кульба, В. В. Методы формирования сценариев развития социально–экономических систем [Текст] / В. В. Кульба и др. – Москва : СИНТЕГ, 2004.– 291 с.
9. Логвиненко, В. І. Державне управління функціонуванням і розвитком ЖКГ в Україні [Текст] : монографія / В. І. Логвиненко. – Донецьк : [СПД Купріянов В.С.], 2009. – 487 с.
10. Механізми розвитку житлово–комунального господарства: системи управління, ціноутворення, підготовки кадрів [Текст] : монографія / Б. М. Данилишин та ін. – Донецк : Юго–Восток, 2008. – 351 с.
11. Пивавар, І. В. Особливості формування тарифної політики у сфері житлово–комунального господарства на сучасному етапі [Текст] / І. В. Пивавар, В. М Філатов // Бизнес Информ. – 2013. – № 3. – С. 331–336.
12. Филюк, Г. М. Природні монополії та їх регулювання у трансформаційній економіці України [Текст] : автореф. дис. ... канд. екон. наук : 08.01.01 / Филюк Г. М. ; Київ. нац. ун–т ім. Т. Шевченка. – К., 2001. – 22 с.
13. Фігурка, М. В. Державне регулювання організаційних змін в теплоенергетиці житлово–комунального господарства України [Текст] : автореф. дис. ... канд. екон. наук : 08.00.03 / Фігурка М. В. ; Терноп. нац. екон. ун–т. – Тернопіль, 2010. – 20 с.
14. Pylypenko, A. Potential for the development of enterprise facilities: identification and assessment [Text] / A. Pylypenko, A.

Lytvynenko // Economic Annals–XXI. – 2016. – № 159 (5–6). – P. 52–57.

15. Енергетична стратегія України на період до 2030 року [Електронний ресурс] : розпорядження Кабінету Міністрів від 15 березня 2006 р. № 145. – Режим доступу: zakon.rada.gov.ua/signal/kr06145a.doc.

16. Єріна, А. М. Статистичні аспекти визначення рейтингів / А. М. Єріна, С. С. Ващаєв // Статистика України. – 2000. – № 4. – С. 74–79.

Стаття надійшла до редакції 18.10.2017

References

1. Amosov, O. Yu. (2010). Mistse zhytlovo–komunalnoho hospodarstva na rynku sfery posluh Ukrainy. *Bisnes–inform, 11*, 32–38.

2. Berezhna, A. Yu. (2013). Paradypma innovatsiinoho rozvytku kommunalnoho hospodarstva mista v umovakh globalizatsii. *Kommunalnoe khoziaistvo gorodov. 109*, 232–246.

3. Dzezyk, S. S. (2004). *Derzhavne rehuliuvannia pryrodnykh monopolii na lokalnykh rynkax komunalnykh posluh*: avtoref. dys. kand. ekon. nauk. Odesa.

4. Dubina, I. N. (2010). *Matematiko–statisticheskie metody v empiricheskikh sotsialno–ekonomicheskikh issledovaniiakh.* Moskva: Finansy i statistika ; INFRA–M.

5. Dubrov, A. M., Mkhitarian, V. S., & Troshyn, L. I. (1998). *Mnogomernye statisticheskie metody*. Moskva: Finansy i statistika.

6. Zelinska, O.M. (2009). *Derzhavne rehuliuvannia monopolizmu v transformatsiinii ekonomitsi Ukrainy*: avtoref. dys. kand. ekon. nauk: 08.00.03. Lviv.

7. Kachala, T. M. (2008). *Zhytlovo–komunalne hospodarstvo v systemi miskoho kompleksu.* Kyiv: Naukova dumka.

8. Kulba, V. V. (2004). *Metody formirovaniia stsenariev razvitiia sotsalno–ekonomicheskikh sistem.* Moskva: Sinteg.

9. Lohvynenko, V. I. (2009). *Derzhavne upravlinnia funktsionuvanniam i rozvytkom ZhKH v Ukraini*. Donetsk: [SPD Kupriianov V.S.].

10. Danylyshyn, B. M. (2008). *Mekhanizmy rozvytku zhytlovo–komunalnoho hospodarstva: systemy upravlinnia, tsinoutvorennia, pidhotovky kadriv*. Donetsk: Yuho–Vostok.

11. Pyvavar, I. V., & Filatov, V. M. (2013). Osoblyvosti formuvannia taryfnoi polityky u sferi zhytlovo–komunalnoho hospodarstva na suchasnomu etapi. *Biznes–Inform*, *3*, 331–336.

12. Fyliuk, H. M. (2001) .*Pryrodni monopolii ta ikh rehuliuuvannia u transformatsiinii ekonomitsi Ukrainy*: avtoref. dys. kand. ekon. nauk: 08.01.01. Kyiv.

13. Fihurka, M. V. (2010) *Derzhavne rehuliuvannia orhanizatsiinykh zmin v teploenerhetytsi zhytlovo–komunalnoho hospodarstva Ukrainy*: avtoref. dys. kand. ekon. nauk : 08.00.03. Ternopil.

14. Pylypenko, A., & Lytvynenko, A. (2016). Potential for the development of enterprise facilities: identification and assessment. *Economic Annals–XXI*, *159(5–6)*, 52–57.

15. Rozporiadzhennia Kabinetu Ministriv. (2016, March). *Enerhetychna stratehiia Ukrainy na period do 2030 roku*. Available at: zakon.rada.gov.ua/signal/kr06145a.doc

16. Yerina, A. M., & Vashchaev, S. S. (2000). Statystychni aspekty vyznachennia reitynhiv. *Statystyka Ukrainy, 4*, 74–79.

Received 18.10.2017