# ECONOMICS AND NATIONAL MANAGEMENT

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## ASSESSMENT AND ANALYSIS OF EFFICIENCY SYSTEM MANAGEMENT BY INNOVATIVE FACTORS FOR SUSTAINABLE DEVELOPMENT OF NATIONAL ECONOMY FROM THE POSITION SATISFACTION OF VITAL INTERESTS POPULATION IN UKRAINE

**Oksana Bondar-Pidhurska *, PhD (Economics), associate Professor.**
**High Educational Institution Accountable to UCU (Ukrainian Cooperative Union)**
**«Poltava University of Economics and Trade».**
**Alla Hliebova **, PhD (Economics), associate Professor.**
**Poltava National Technical Yurii Kondratiuk University**

*ORCID* 0000-0001-7792-4023*
*ORCID** 0000-0002-7030-948X*



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The scientific and methodological approach to the evaluation and analysis of the efficiency of system management by innovation factors for sustainable development in national economy from the point of view satisfaction vital interest's population is developed.

This is the calculation modernized index of human development (MHDI) based on the adjective model based on 26 indicators (social, economic and environmental subsystems), as well as using the principal components and skid matrix methods. The econometric model of MHDI dependence on ecological, economic and social components was constructed. There are 5 groups of factors that affect the level of satisfaction of the vital interest's population as a result of factor analysis. A scientific and methodological approach makes it possible to draw conclusions regarding the effectiveness of public administration in the context of making managerial decisions regarding the satisfaction of the population.

In order to increase the efficiency system management by innovation factors for sustainable development in national economy, from the standpoint of satisfaction vital interest's population, it is proposed to intensify the use of public debt and savings bonds, market and non-market methods of relief debt load.

**Introduction.** In the period of the development information society, the knowledge economy and the implementation of the principles in the information economy, the main criterion for assessing the achievements of the country should be the level of satisfaction vital interests for population reflecting its quality and standard of living, and not only the dynamics of national income, estimated through GDP, which has traditionally been used as the basic evaluation criterion [4, 7].

To this end by satisfying the requirements for socio-economic development, there is the Human Development Index (HDI), the simplicity of which allows governments to use it as a tool for

assessing the effectiveness their work, compared with the authorities of neighbouring countries, as well as a comprehensive indicator for forecasting and evaluation the effectiveness of the management system for the development of the national economy.

At the same time, the active dynamics of the environment, the actions of competitors at all levels of management and beyond require new scientific approaches to the analysis of the effectiveness of the system for economic development management, the application new indicators of its evaluation in accordance with the requirements of time, space, and speed [2].

The questions of assessing the effectiveness for management on the basis of assessing the level and quality of life for population are distinguished in the works by such scientists as V.V. Antropov [1], A.P. Borushko [3], O.V. Bondar-Pidhhurska [2], Z.I. Halusha [5], V.M. Heiets [6], E. M. Libanova [7], P.H. Nikitenko [9], Sen Amartya [11], Yu. M. Kharazishvili [10]. Individual works by scholars highlight the assessment of the effectiveness for national economy management in terms of quality and standard of living of the population [7]. However, there is no comprehensive analysis and assessment of the system in management of innovation factors and sustainable development of a socially oriented economy from the point of view satisfaction population's vital interests, which requires the improvement of the relevant scientific and methodical arsenal.

**The purpose of the article.** To develop a scientific approach to the analysis and evaluation of the efficiency for management system in innovation factors of the sustainable development of the national economy from the point of view satisfaction and the vital interests population of Ukraine.

**Presenting main material**. Taking into account the fact that innovative factors are the driving forces behind which the sustained increase in the level of satisfaction vital interests for overwhelming majority of the population in country long-term perspective a socially oriented economy occurs, the results of management should be evaluated directly from the point of view changing the level of satisfaction in life important interests for population of the country. This resulted in the logic of material presentation in the following way: calculation of MHDI – construction of dynamics MHDI – identification of the most important problems on the way to development – isolation of groups factors due to factor analysis – substantiation of basic innovative factors for socio-economic development in Ukraine – construction of econometric model of the management system in the innovation factors of sustainable development the national economy from the point of view satisfaction for vital interests population – the formation of conclusions and proposals on the effectiveness of the adoption to managerial decisions by the bodies of state regulation.

The results of the MHDI calculation of Ukraine 2007–2017 from the standpoint of social, economic and environmental subsystems using the method of the main components and the slip matrix [10] are presented in three parts in the tables below (Table 1-3).

**Symbols:** X11-X20 - indicators of the social subsystem MHDI, in particular X11 - life expectancy (at birth), years; X12 - the average length of training, years; X13 - GNI per capita, USD US PPP, current prices; X14 - fertility coefficient (total fertility rate), ‰ - strike; X15 - the number of suicides per 100 thousand people (mortality from intentional self-harm); X16 - change in population,%; X17 - level of satisfaction with the life of the population, points; X18 - average living conditions per inhabitant, m2; X19 - social security indexes (ratio of the average size of the assigned monthly pension to pensioners who are registered with the Pension Fund bodies (UAH) to the subsistence minimum by the end of the year (UAH)); X10 - indicator of inequality in the distribution of available resources (Gini index).

**Source:** O.V. Bondar-Pidhurska on the basis their own calculations, data from the State Statistics Service, Eurostat, the UN Human Development Report and use of the Microsoft Excel application suite.

The greatest weight among the indicators of the social subsystem MHDI of Ukraine in 2007–2017 is the indicator X17 – the level of satisfaction with the population (0.061689), which allows to recommend it as a basic and to raise the problem of increasing the level satisfaction of vital interest's population in the country through a steady tendency to decrease it. The second and third places belong to the social security indicators (X19) – 0.006767 and the population change indicator (X16) – 0.005117, although they are significantly less than the indicator X17 within this subsystem. The

weight of the remaining indicators does not have a significant effect compared to the base (Table 1). In addition, one should consider the presence (1) or the absence (0) in national idea that unites all segments of the population, but the adjective model and the physical nature of the given indicator in the given format do not allow to make it, posing a new task to the scientific community.

**Table 1**

**Results of calculation MHDI of Ukraine for 2007-2017: social sub-system (part 1)**

| Роки | Indicators of the social subsystem | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | **x11** | **x12** | **x13** | **x14** | **x15** | **x16** | **x17** | **x18** | **x19** | **X20** |
| **2007** | 0,00069 | 0 | 6,98E-05 | 0,0038 | 0,0011 | 0,0029 | 0,0449 | 0,00010 | 0,0023 | 0,0007 |
| **2008** | 0,00069 | 0 | 7,36E-05 | 0,0042 | 0,0011 | 0,0028 | 0,0449 | 0,00011 | 0,0033 | 0,0007 |
| **2009** | 0,00070 | 0 | 6,27E-05 | 0,0042 | 0,0011 | 0,0028 | 0,0449 | 0,00011 | 0,0034 | 0,0008 |
| **2010** | 0,00071 | 0 | 6,68E-05 | 0,0041 | 0,0011 | 0,0029 | 0,0449 | 0,00011 | 0,0030 | 0,0007 |
| **2011** | 0,00071 | 0 | 7,16E-05 | 0,0042 | 0,0011 | 0,0031 | 0,0449 | 0,00011 | 0,0031 | 0,0008 |
| **2012** | 0,00071 | 0 | 7,37E-05 | 0,0044 | 0,0011 | 0,0033 | 0,0440 | 0,00011 | 0,0029 | 0,0008 |
| **2013** | 0,00071 | 0 | 7,52E-05 | 0,0043 | 0,0011 | 0,0033 | 0,0397 | 0,00011 | 0,0032 | 0,0007 |
| **2014** | 0,00071 | 0 | 7,59E-05 | 0,0043 | 0,0012 | 0,0033 | 0,0353 | 0,00010 | 0,0033 | 0,0008 |
| **2015** | 0,00071 | 0 | 6,94E-05 | 0,0043 | 0,0012 | 0,0032 | 0,0353 | 0,00011 | 0,0028 | 0,0008 |
| **2016** | 0,00072 | 0 | 7,24E-05 | 0,0042 | 0,0012 | 0,0032 | 0,0229 | 0,00011 | 0,0028 | 0,0008 |
| **2017** | 0,00072 | 0 | 7,87E-05 | 0,0040 | 0,0011 | 0,0032 | 0,0229 | 0,00011 | 0,0028 | 0,0008 |
| **Weight** | **0,000814 665** | **0** | **0,000398047** | **0,0043 64** | **0,001529** | **0,0051 17** | **0,06168 9** | **0,000229 522** | **0,006767** | **0,001942** |
| **Rank** | **7** | **0** | **8** | **4** | **6** | **3** | **1** | **9** | **2** | **5** |

In the economic component MHDI of Ukraine for 2007–2017, the percentage of the population using the Internet is the most important – 0,105876. It is connected with the formation in the information society and the digital economy, as well as the expediency of its further development. The second place belongs to the indicator – public external debt (0,096369) as an indicator of the state sovereignty in the country. He testifies to the need to intensify efforts of the national security bodies of Ukraine in the direction and preservation in the current situation. Third place belongs to the percentage of GDP on R & D as the main lever of state regulation, the low level which forms problems in science and innovation – 0,07638 (Table 2).

**Symbols:** X21-X29 - indicators of the economic subsystem MHDI: X21 - Internet usage level,% of population; X22 - unemployment rate,% X23 - labor productivity, mln. USD per thousand employed persons; X24 - degree of depreciation of fixed assets,%; X25 -% of GDP on R & D; X26 - inflation,%; X27 - import coverage indicator,%; X28 - taking into account public external debt (% of GDP); X29 - the level of the shadow economy in% of the official GDP.

**Source:** own calculations of O.V. Bondar-Pidhurska, data from the State Statistics Service, Eurostat, the UN Human Development Report and the use of the Microsoft Excel application suite

The highest weight in the environmental component MHDI of Ukraine in 2007–2017 is the rate of waste generation per person (0.459413). This proves the need to develop measures to eliminate this problem, which has intensified in recent years and has gained large scale in the country.

**Table 2**

**Results of calculation MHDI of Ukraine for 2007-2017: economic subsystem (part 2)**

| Роки | Indicators of the economic subsystem | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | **x21** | **x22** | **x23** | **x24** | **x25** | **x26** | **x27** | **x28** | **x29** |
| **2007** | 0,0230 | 0,0070 | 0,0004 | 0,0177 | 0,0661 | 0,0046 | 0,0090 | 0,0589 | 0,0035 |
| **2008** | 0,0253 | 0,0070 | 0,0004 | 0,0138 | 0,0588 | 0,0039 | 0,0086 | 0,0586 | 0,0043 |
| **2009** | 0,0288 | 0,0054 | 0,0004 | 0,0143 | 0,0661 | 0,0050 | 0,0098 | 0,0371 | 0,0017 |
| **2010** | 0,0380 | 0,0059 | 0,0004 | 0,0076 | 0,0588 | 0,0054 | 0,0093 | 0,0389 | 0,0022 |
| **2011** | 0,0449 | 0,0060 | 0,0004 | 0,0072 | 0,0514 | 0,0059 | 0,0093 | 0,0446 | 0,0033 |
| **2012** | 0,0575 | 0,0063 | 0,0004 | 0,0068 | 0,0588 | 0,0064 | 0,0090 | 0,0450 | 0,0031 |
| **2013** | 0,0610 | 0,0065 | 0,0004 | 0,0066 | 0,0588 | 0,0036 | 0,0106 | 0,0445 | 0,0030 |
| **2014** | 0,0656 | 0,0054 | 0,0004 | 0,0038 | 0,0441 | 0,0036 | 0,0106 | 0,0323 | 0,0030 |
| **2015** | 0,0725 | 0,0054 | 0,0004 | 0,0152 | 0,0353 | 0,0050 | 0,0102 | 0,0088 | 0,0049 |
| **2016** | 0,0725 | 0,0053 | 0,0004 | 0,0152 | 0,0330 | 0,0049 | 0,0096 | 0,0269 | 0,0064 |
| **2017** | 0,0748 | 0,0053 | 0,0004 | 0,0125 | 0,0330 | 0,0049 | 0,0096 | 0,0269 | 0,0064 |
| **Weight** | **0,105876** | **0,010781** | **0,000404** | **0,041355** | **0,07638** | **0,01755** | **0,012127** | **0,096369** | **0,018314** |
| **Rank** | **1** | **7** | **9** | **4** | **3** | **6** | **8** | **2** | **5** |

At the same time, the physical nature of the indicators should be taken into account. So, when it comes to preserving the sovereignty of the country due to the revival and modernization of national production, in particular industry, the exact indicator of the level competitiveness for products of the bat to choose the exact energy intensity of GDP) (Table 3).

**Table 3**

**Results of calculation MHDI in Ukraine for 2007-2017: ecological subsystem (part 3)**

| Роки | Indicators of the ecological subsystem | | | | Y |
|---|---|---|---|---|---|
| | **x31** | **x32** | **x33** | **x34** | **MHDI** |
| **2007** | 0,0036 | 0,0087 | 0,457069 | 0,003443 | **0,719683** |
| **2008** | 0,0036 | 0,0091 | 0,457315 | 0,00554 | **0,714108** |
| **2009** | 0,0037 | 0,0112 | 0,458285 | 0,00776 | **0,707580** |
| **2010** | 0,0022 | 0,0104 | 0,067584 | 0,004046 | **0,308428** |
| **2011** | 0,0036 | 0,0098 | 0,045897 | 0,005691 | **0,296170** |
| **2012** | 0,0041 | 0,0096 | 0,041765 | 0,004242 | **0,310534** |
| **2013** | 0,0048 | 0,0101 | 0,043448 | 0,005513 | **0,312104** |
| **2014** | 0,0051 | 0,0118 | 0,128964 | 0,009867 | **0,373563** |
| **2015** | 0,0058 | 0,0127 | 0,166836 | 0,013631 | **0,405052** |
| **2016** | 0,0066 | 0,0060 | 0,095937 | 0,014368 | **0,333112** |
| **2017** | 0,0066 | 0,0060 | 0,095937 | 0,014368 | **0,335037** |
| **Weight** | **0,01738** | **0,023325** | **0,459413** | **0,037876** | **x** |
| **Rank** | 4 | 3 | 1 | 2 | x |

**Symbols:** X31-X34 - components of the environmental subsystem of MHDI: X31 - energy intensity of GDP in the PPP 2015 (kg NU / $); X32 - indicators of the state of the environment in the light of global warming of the climate (CO2, kg / person); X33 - formation of waste per person, thousand tons; X34 - consumed fresh water per person2, mln.m3.

**Source:** own calculations of O.V. Bondar-Pidhurska, data from the State Statistics Service, Eurostat, the UN Human Development Report and the use of the Microsoft Excel application suite.

The resultant value is the modernized Human Development Index (MHDI) of Ukraine. He is considered the main regulated parameter of the management system for innovation factors of

sustainable development for a socially oriented economy, and is calculated on the basis of the adjective model in management [10]. The obtained tendency of the steady decline MHDI in 2007-20017 forces to pay attention to its significant reduction by 53.45% and to testify to the ineffective state regulation of crisis situations in Ukraine. The dynamics MHDI change in Ukraine in 2007-2017 is shown in Fig. 1

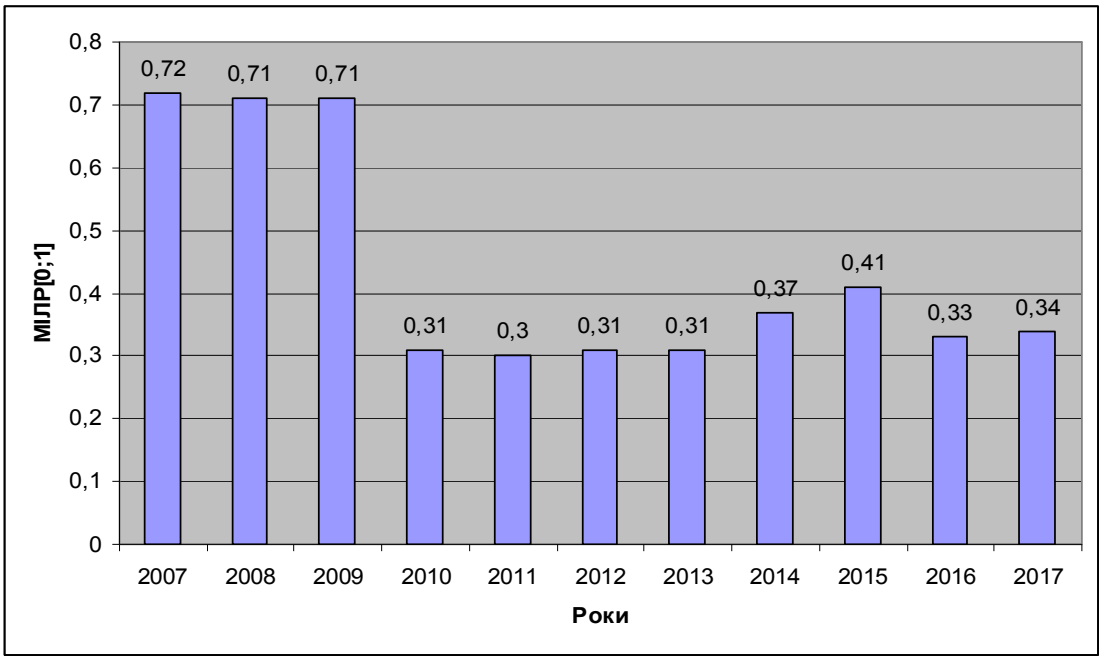


**Fig. 1. Dynamics of change MHDI in Ukraine for 2007-2017**

**Source:** own calculations of O.V. Bondar-Pidhurska and use the package of Microsoft Excel applications.

Consequently, the tendency of MHDI change in Ukraine during 2007–2017 indicates negative processes that erode, like rye, national economy, reduce the level of satisfaction of vital interest's population and make it expedient to consider the architectonics MHDI in Ukraine from the position of sub-indices (Table 4).

**Table 4**

**Arithmetic MHDI of Ukraine 2007-2017 from the position of sub-indices**

| Years | Index of ecological subsystem | Index of economic subsystem | Index of social subsystem | **MHDI** |
|---|---|---|---|---|
| 2007 | 0,864 | 0,50162 | 0,68398 | **0,719683** |
| 2008 | 0,8691 | 0,4765 | 0,697856 | **0,714108** |
| 2009 | 0,8788 | 0,4447 | 0,700633 | **0,707580** |
| 2010 | 0,1558 | 0,43977 | 0,700553 | **0,308428** |
| 2011 | 0,1227 | 0,45644 | 0,701149 | **0,296170** |
| 2012 | 0,1141 | 0,50999 | 0,692259 | **0,310534** |
| 2013 | 0,1221 | 0,51442 | 0,642142 | **0,312104** |
| 2014 | 0,2895 | 0,4453 | 0,59127 | **0,373563** |
| 2015 | 0,4567 | 0,39715 | 0,586688 | **0,405052** |
| 2016 | 0,3686 | 0,41585 | 0,434413 | **0,333112** |
| 2017 | 0,7155 | 0,46272 | 0,429101 | **0,335037** |
| 2017/2007,% | 82,81 | 92,25 | 62,74 | 46,55 |

***Source:*** own calculations O.V. Bondar-Pidhurska and use of the package of Microsoft Excel applications.

Analysis of MHDI from the position sub-indices allowed to conclude that the overall decrease in the MHDI in 2017 compared to 2007 at 53.45 % due to a synchronous decrease in all components:

the index of the environmental subsystem by 17 %, the index of the economic subsystem by 7.75 %, the index of social subsystem at 37.26 %. The dynamics of the sub-indices of the ecological, economic, social subsystems and the modernized HDI of Ukraine in 2007–2017 is shown in Figure 2.

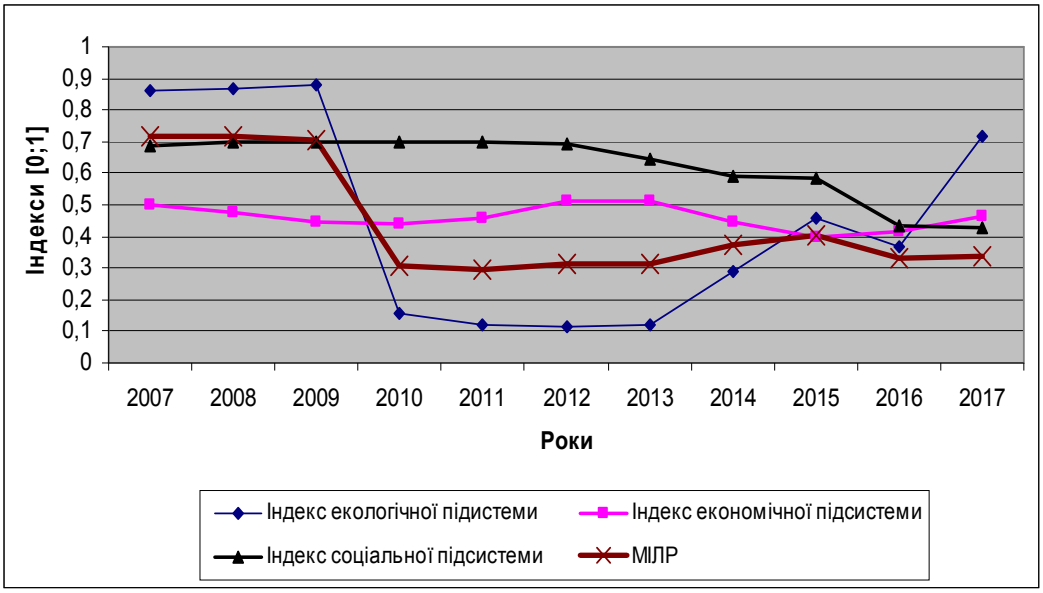


**Fig. 2. Changing sub-indices of the ecological, economic, social subsystems and modernized HDI of Ukraine in 2007–2017**

**Source**: own calculations of O.V. Bondar-Pidhurska and use of the package of Microsoft Excel applications.

In addition, it should be noted that despite the general downward trend, the sub-index of the MHDI environmental subsystem in 2013–2017 imposes a recovery phase, but it can not be called positive in the background of national industry entropy, population decline, and other obvious socio-economic development problems.

The analysis patterns of development MHDI in Ukraine for 2007–2017 from the point of view changing its sub-indices of the ecological, economic and social subsystems can be expressed with the help of an econometric equation, whose reliability is quite high, which is confirmed by the determination criterion – 0,937168 (Table 5).

**Table 5**

**Results of formation the laws of development in Ukraine MHDI for 2007-2017 from the position sub-indices of the ecological, economic and social subsystems**

| Indicators | X3 | X2 | X1 | X0 | Standard error |
|---|---|---|---|---|---|
| Coefficients | 0,734168 | -0,02301 | 0,498162 | -0,23398 | **ta0=4,092519** |
| Standard error coefficients | 0,179393 | 0,493681 | 0,05278 | 0,211991 | ta1=-0,04661 |
| Determination coefficient | 0,937168 | 0,053936 | x | x | **ta2=9,438437** |
| Fisher's Criterion | 34,8025 | 7 | x | x | ta3= -1,10374 |
| Dispersion | 0,303733 | 0,020364 | x | x | **ttabl=2,364624** |
| Result | Y = -0,234 + 0,498x1 – 0,023x2 + 0,734x3 or **Y = -0,234 + 0,498Ekol – 0,023Ekon + 0,734Soc** | | | | |

**Symbols**: Ekol, Ekon, Soc - ecological, economic and social subsystems

**Source:** own calculations of O.V. Bondar-Pidhurska and using the SPSS program.

Interpreting the obtained equation it can be stated that an increase of 1% of the ecological component causes an increase in MHDI by 0.498% with unchanged economic and social components. If to increase by 1% the social component, MHDI will increase by 0.734% with constant environmental and social components, and an increase by 1% of the economic component MHDI will decrease by 0.023% in economic and social terms. To validate the model, we find the tabular value of

Fisher's criterion at the significance level of 0.95. Yes, Fabel = 4.346831. Since F> Fabel, then the obtained model is reliable with a probability of 0.95.

Next, we compute the standard errors of the coefficients X0, X1, X2, X3 and the values of t-criteria (Student's criteria) for the named coefficients. Consequently, ta0 = 4,092519; ta1 = -0.04661; ta2 = 9.438437, ta3 = -1.10374; ttabl = 2,364624. Since ta0> ttabl, the coefficient X0 is reliable with a probability of 0.95. Since ta1<ttabl, the coefficient X1 is statistically equal to 0. Since ta2> ttabl, the coefficient X2 is reliable with a probability of 0.95. Since ta3 <ttabl, the coefficient X3 is statistically equal to 0.

As a result, it was concluded that X1 and X3 are zero, devalued the impact of the environmental and social components, affecting the overall change in the MHDI dynamics, while the negative significance of the economic component in the composite econometric model distorts the nature of management and requires further efforts to build predictable scenarios of sustainable development socially oriented economy on the basis of innovative factors.

The results of the factor analysis performed on the change in the MHDI of Ukraine during 2007-2017 allowed using the SPSS application package to get the matrix of the returned components, the elaboration which allowed the identification five groups of factors that influenced the formation of the modernized HDI: the first group - X4, X6, X9, X10, X11, X14, X17, X18, X19, X22; the second group – X1, X5, X7, X13, X21: the third group – X3, X8, X13, X20; the fourth group – X2, X12; Fifth group – X15, X16.

*The first group* – the basic factors reflecting the sustainable innovation development of the socially oriented economy (activity the country's vital activity taking into account inequality): 1) components of the social subsystem: X4 - the number suicides per 100 thousand people (mortality from intentional self-harm); X6 - level of satisfaction with the life of the population, X9 – indicator of inequality in the distribution of available resources (Gini index); 2) components of the economic subsystem – X10 – percentage of the population using the Internet; X11 – unemployment rate; X14 – percentage of GDP on R & D; X17 – public external debt; X18 – the level of the shadow economy; 3) components of the ecological subsystem – X19 – energy intensity of GDP; X22 – consumed fresh water per person.

*Second group* – factors with results of life (target factors): X1 – life expectancy (at birth); X5 – average rate of change population in the country, thousand people; X7 – living conditions per inhabitant on average, X21 – waste generation per person.

*Third group* – factors with the primary conditions of socio-ecological and economic reproduction: X3 – fertility coefficient (total fertility rate); X8 – indicators of social security; X13 – level of depreciation of fixed assets; X20 –CO2 emissions. That is, the longevity of the population and the average rate of change in the population in the country are due to the level of living conditions and the formation of waste. So, the birth rate in the country depends on the indicators of social security, the state of the environment, including harmful CO2 emissions affecting the health of the person, as well as the level of depreciation fixed assets as an indicator ability of the economy to develop domestic production –as the basis national security of the country.

*The fourth group* – assessment and welfare factors: X2 – gross national income per capita, USD. US PPP, current prices; X12 – productivity of work. Thus, the level of labour productivity in the country determines the amount of gross national income per capita, which allows using these factors to assess the welfare of the population.

*Fifth group* – monetary (price) factors: X15 – inflation, X16 – coverage of import by export. Thus, positive results of foreign economic activity in the country cause a decrease in inflation, which influences (increases) on the degree satisfaction of the majority population.

Thus, the results of the factor analysis allowed the use five groups of factors that affect the level of MHDI. Among them, the first one – the basic factors reflecting the sustainable innovation development of the socially oriented economy (the activity of the country's life, taking into account inequality) is the most numerous, where according to the social, economic and ecological subsystems it is necessary to distinguish the most significant (basic factors): the level satisfaction

with the life of the population, the percentage of GDP for R & D, energy intensity of GDP. It is expedient to use them in the future for rapid diagnosis, choice the type of innovation policy and strategy of sustainable innovation socially oriented economic development Ukraine, as well as development of directions for increasing the efficiency of management became the innovative development socially oriented economy.

So, the analysis of world experience in the management of external public debt [8] made it possible to formulate the following recommendations.

*First*, support and develop the securities market. Developed countries have a high level of development of the market for government securities. They are implemented for domestic and foreign investors to diversify risks.

*Second,* use both market and non-market methods for reducing debt burden. Among them, widespread distribution should be converted debt obligations into shares. Other securities with discounted or reduced interest, developmental conversion, ecology and others.

*Thirdly*, use government bonds and government savings bonds. Public savings bonds will help to attract additional funds for a long period of time. This tool will not only balance the sources of funding for innovative development factors. This will contribute to solving a number of urgent social problems of the Ukrainian economy, in particular, in the pension reform.

Government debt bonds help to attract funds for the short-term. It is a real tool for investing funds by legal entities and individuals.

For legal entities, this is 100% guarantee of repayment by the state; high yield (rates on bonds higher compared to deposit rates); highly liquid collateral to replenish working capital; highly liquid asset, which can be sold at any time; possibility to acquire in national and foreign currency.

For individuals it is 100% guarantee of state money back; high profitability (rates on bonds above compared to deposit rates); preferential taxation (no personal income tax is charged, but only a military fee).

The implementation proposed measures and instruments will help to increase the efficiency of the system management innovation factors of the sustainable development socially oriented economy by solving financial problems in the domestic and foreign markets, reducing the state external debt, returning trust to the financial system of Ukraine, and for the citizens the possibility of financial accumulation.

Consequently, a scientific approach to the analysis and evaluation efficiency of the management system for innovative factors of sustainable development a socially oriented economy is developed, which is the calculation of the modernized index of human development on the basis of an adjective model based on 26 indicators, the methods of the main components, skid matrix, factor analysis. The obtained tendency of the steady decline MHDI in 2007-20017 forces to pay attention to its significant reduction by 53.45% and to testify to the ineffective state regulation of crisis situations in Ukraine.

There are 5 groups of factors that affect the level of satisfaction of the vital interest's population as a result of factor analysis. This allows us to draw conclusions regarding the efficiency work of public administration bodies in the context of making managerial decisions regarding the satisfaction of vital interest's population. The econometric model MHDI dependence on ecological, economic and social components was constructed, the results, which according to Student's criterion, confirmed the reliability only one coefficient of the economic subsystem at zero values for other components. In addition, the negative "–" value the coefficient distorts the nature of management and requires the need for a scientific search for other models to predict the dynamics of development.

It is recommended to use savings bonds as a tool for managing public external debt and to increase the efficiency of management innovation factors for sustainable development of the national economy from the point of view satisfaction of the population.

The impossibility of incorporating such variables as the length training and the availability of a national idea – important variables of the socialization of economic development requires the

search for new approaches to the assessment and prediction management processes based on the modernization of the human development index.

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**Бондар-Підгурська Оксана Василівна**, кандидат економічних наук, доцент. ВНЗ Укоопспілки «Полтавський університет економіки та торгівлі». **Глєбова Алла Олександрівна**, кандидат економічних наук, доцент. Полтавський національний технічний університет імені Юрія Кондратюка. **Оцінювання і аналіз ефективності системи управління інноваційними факторами сталого розвитку національного господарства з позиції задоволення життєво важливих інтересів населення України**. Розроблено науково-методологічний підхід до оцінювання та аналізу ефективності системи управління

інноваційними факторами сталого розвитку національного господарства з позиції задоволення життєво важливих інтересів (ЖВІ) населення, що являє собою розрахунок модернізованого індексу людського розвитку (МІЛР) на засадах адитивної моделі на основі 26 показників (соціальної, економічної та екологічної підсистем), методів головних компонент і ковзаної матриці. Проаналізовано архітектоніку МІЛР України 2007–2017 рр. з позиції субіндексів екологічної, соціальної та економічної підсистем.

Найбільшу вагу серед індикаторів соціальної підсистеми МІЛР України 2007–2017 рр. має рівень задоволення життям населення (0,061689), що дозволяє рекомендувати його як базовий і порушити проблему щодо підвищення рівня задоволення ЖВІ населення в країні. Друге та третє місця належать індикатору зміни чисельності населення – 0,005117 і показникам соціального забезпечення – 0,006767. Вага решти показників доводить не настільки суттєвий вплив порівняно з базовими.

Найбільша вага серед показників екологічної складової МІЛР України 2007–2017 рр. належить утворенню відходів на одну особу (0,459413). Це обумовлює необхідність розроблення заходів з усунення такої проблеми, яка активізувалась останнім часом та набрала великих масштабів у країні.

Серед показників економічної складової МІЛР України 2007–2017 рр. найбільшу вагу має відсоток населення, що користується Інтернетом, – 0,105876. Це пов'язано зі становленням інформаційного суспільства й цифрової економіки, а також доцільністю її подальшого розвитку. Друге місце належить показнику «державний зовнішній борг» (0,096369) як індикатору суверенітету країни. Він свідчить про необхідність активізації зусиль органів національної безпеки України у напрямі його збереження. Третє місце належить відсотку ВВП на НДДКР як основному важелю державного регулювання, низький рівень якого формує проблеми у науці та інноваційній сфері, – 0,07638.

Отже, аналіз зміни МІЛР дозволяє робити висновки стосовно ефективності роботи органів державного управління в контексті прийняття управлінських рішень щодо задоволення ЖВІ населення. МІЛР вважають основним регульованим параметром системи управління інноваційними факторами сталого розвитку соціально орієнтованої економіки. Отримана тенденція стійкого зниження МІЛР України 2007–2017 рр. (на 53,45 %) свідчить про недостатню ефективність органів державного регулювання щодо попередження та усунення кризових ситуацій в Україні.

З метою підвищення ефективності управління інноваційними факторами сталого розвитку національного господарства з позиції задоволення ЖВІ населення запропоновано активізувати використання державних боргових і ощадних облігацій, ринкових і неринкові методів полегшення боргового навантаження. Це обумовлено тим, що на сучасному етапі розвитку національної економіки державний зовнішній борг є одним із значимих індикаторів стану економіки. Одночасно він є критерієм ефективності державної фінансової політики, загрозою і можливістю для економіки України. З метою оптимізації його розміру використовують різні методи, підходи, інструменти. На основі аналізу світового досвіду встановлено, що стратегічну роль у регулюванні цього питання відіграє саме ринок цінних паперів, зокрема боргові цінні папери. Тому з метою оптимізації розміру зовнішнього державного боргу є сенс використовувати державні боргові облігації та державні ощадні облігації.

Державні ощадні облігації допоможуть залучити додаткові кошти на тривалий термін, а також збалансувати джерела фінансування інноваційних факторів розвитку. Це сприятиме розв'язанню низки нагальних соціальних проблем економіки України, зокрема у пенсійній реформі.

Державні позикові облігації сприятимуть залученню коштів на короткостроковий період. Це реальний інструмент для інвестування коштів юридичними і фізичними особами.

***Ключові слова:*** інноваційні фактори, соціально-економічний розвиток, національна економіка, модернізований індекс людського розвитку, управління.

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**Bondar-Pidhurska Oksana,** PhD (Economics), associate Professor. High Educational Institution Accountable to UCU (Ukrainian Cooperative Union) «Poltava University of Economics and Trade». **Hliebova Alla,** PhD (Economics), associate Professor. Poltava National Technical Yurii Kondratiuk University.

**Assessment and analysis of efficiency system management by innovative factors for sustainable development of national economy from the position satisfaction of vital interests population in Ukraine.**

The scientific and methodological approach to the evaluation and analysis of the efficiency of system management by innovation factors for sustainable development of national economy from the point of view satisfaction vital interest's population is developed.

This is the calculation of the modernized index human development based on the adjective model based on 26 indicators (social, economic and environmental subsystems), as well as using the methods of the main components and the slip matrix. The resultant value is the modernized Human Development Index (MHDI) of Ukraine.

The architectonics MHDI of Ukraine in 2007–2017 from the position of sub-indices of the ecological, social and economic subsystems is analyzed.

Consequently, the scientific and methodological approach based on the MHDI change allows us to draw conclusions regarding the effectiveness of the work and public administration bodies in the context of making managerial decisions regarding the satisfaction of the vital interest's population. MHDI considers the main regulated parameter of the system management in the innovation factors of sustainable development in socially oriented economy. The tendency of steady decline MHDI of Ukraine in 2007–2017 on 53.45 % was confirmed, which confirms inefficient state regulation of crisis situations in Ukraine.

In order to increase the efficiency management of innovative factors by sustainable development of the national economy, from the standpoint of satisfaction vital interest's population, it is proposed to intensify the use of public debt and savings bonds, market and non-market methods of relief and debt load. This is due to the fact that at the current stage of development in the national economy, public external debt is one of the most significant indicators of the state economy. It is at the same time a criterion for the effectiveness of public financial policy, as well as a threat and opportunity for the Ukrainian economy. In order to optimize its size, various methods, approaches, tools are used. Based on the analysis of world experience, it has been established that the securities market, in particular debt securities, plays a strategic role in regulating this issue. Therefore, it makes sense to recommend government debt bonds and government savings bonds to optimize the amount of external public debt.

***Keywords:*** innovative factors, socio-economic development, national economy, modernized Human Development Index, management.

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**Бондарь-Подгурская Оксана Васильевна**, кандидат экономических наук, доцент. ВУЗ Укоопсоюза «Полтавский университет экономики и торговли». **Глебова Алла Александровна**, кандидат экономических наук, доцент. Полтавский национальный технический университет имени Юрия Кондратюка.

**Оценка и анализ эффективности системы управления инновационными факторами устойчивого развития национального хозяйства с позиции удовлетворения жизненно важных интересов населения Украины**.

Разработан научно-методологический подход к оценке и анализу эффективности системы управления инновационными факторами устойчивого развития национального хозяйства с позиции удовлетворения жизненно важных интересов (ЖВИ) населения. Он представляет собой расчет модернизированного индекса человеческого развития (МИЧР) на основе аддитивной модели с использованием 26 показателей, методов главных компонент и скользящей матрицы. Проанализирована архитектоника МИЧР Украины 2007–2017 гг. с позиции субиндексов экологической, социальной и экономической подсистем. Итак, анализ изменения МИЧР позволяет делать выводы об эффективности работы органов государственного управления в контексте принятия управленческих решений по удовлетворению ЖВИ населения. МИЧР считают основным регулируемым параметром системы управления инновационными факторами устойчивого развития социально ориентированной экономики. Полученная тенденция устойчивого снижения МИЧР Украины 2007–2017 гг. (на 53,45%) свидетельствует о недостаточной эффективности органов государственного регулирования по предупреждению и устранению кризисных ситуаций в Украине. С целью повышения эффективности управления инновационными факторами устойчивого развития национального хозяйства с позиции удовлетворения ЖВИ населения предложено активизировать использование государственных долговых и сберегательных облигаций, рыночных и нерыночных методов облегчения долговой нагрузки. Это обусловлено тем, что на современном этапе развития национальной экономики государственный внешний долг является одним из значимых индикаторов состояния экономики. С целью оптимизации его размера используют различные методы, подходы, инструменты. На основе анализа мирового опыта установлено, что стратегическую роль в регулировании этого вопроса играет именно рынок ценных бумаг, в частности долговые ценные бумаги. Поэтому с целью оптимизации размера внешнего государственного долга есть смысл использовать государственные долговые облигации и государственные сберегательные облигации.

***Ключевые слова:*** инновационные факторы, социально-экономическое развитие, национальная экономика, модернизированный индекс человеческого развития, управление.