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Improved methodology for constructing and calculating the multidimensional human development index

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Abstract

The paper objectives are to identify the drawbacks of the human development index and to propose ways of improving it. Historical-logical and morphological methods were used, as well as the modeling method of latent indices. In result, the main disadvantage of the complicated algorithm of the human development index consists in the fact that further widening of the components of the human development index will make the procedure of such calculation even more complicated. In conclusion, the model would better describe the actual level of human development in various countries and regions, under knowledge economy characterized by increased creative activity.

Key words: Spectrum, Targeting, Trend, Upgrade, Well-Being.

Metodología mejorada para construir y calcular el índice de desarrollo humano multidimensional

Resumen

Los objetivos del documento son identificar los inconvenientes del índice de desarrollo humano y proponer formas de mejorarlo. Se utilizaron métodos histórico-lógicos y morfológicos, así como el método de modelado de índices latentes. En consecuencia, la principal desventaja del algoritmo complicado del índice de desarrollo humano consiste en el hecho de que una mayor ampliación de los componentes del índice de desarrollo humano hará que el procedimiento de tal cálculo sea aún más complicado. En conclusión, el modelo describiría mejor el nivel real de desarrollo humano en varios países y regiones, bajo una economía del conocimiento caracterizada por una mayor actividad creativa.

Palabras clave: espectro, focalización, tendencia, actualización, bienestar.

1. INTRODUCTION

The objective of this paper is a critical consideration of methodological approaches to measuring particular indices – arguments of the function of the human potential development index (Human Development Index). HPDI is an estimated aggregated statistical indicator or, which is the same as HDI, – a combined indicator of the most important aspects of people’s well-being (universal well-being). Before 1990, growth rates of the economy, enhancement of material well-being, production of goods and services as a critical goal of development were the reference points of the traditional model of the economic growth of developed countries. At the beginning of the 90-s, the understanding and awareness of the fact that this model of the world development had exhausted itself, having become utterly inefficient, were coming.

Therefore, the world community jointly with two leading international organizations – the U.N.O. (the United Nations Organization) and the World Bank have developed four basic concepts, in which bringing the human being to the forefront as a goal of development has become a goal of development. One of them – the concept of human development – was presented 25 years ago in the first Report on human development. Over the past 25 years, the developers of the Human Development Reports have made, in our viewpoint, several blunders of immature thought concerning, first of all, the methodology of calculation of particular indicators of the human development index. The ultimate goal of this research is to determine the basic directions of status enhancement and to broaden the area of applying the main instrument (human development index) of measuring the main strategic resource of the society – human beings.

In accordance with the working hypothesis, an increase of the number of components of the human development index (HDI) and perfection of the methodology of their calculation will lead to the real, more reliable and fair ranking of countries and regions by the level of human development. The particular index of technology, added by the authors, in the calculation of the combined index of human development would justly bring Japan, Singapore, the Korea Republic, and New Zealand to higher rating positions amongst the countries with a high level of HDI, and it would cause migration of some countries with a high level of human development to the group of countries with a very high level of human development, and conversely, the second ones to the first ones. The hypothesis finds its empirical confirmation as a result of the authors' approbation of perfected HDI in the framework of the Russian Federation.

2. MATERIALS AND METHODS

The fate of any society, Pitirim Sorokin wrote, depends first of all on the properties of its members. The society, consisting of idiots or untalented people, will never be a prosperous society. The society, consisting of talented and strong-willed persons, will inevitably create more perfect forms of good citizenship "... Subjecting the phenomena of prosperity and the downfall of the whole nations to close scrutiny demonstrates that one of the main reasons for them was named the qualitative change of the composition of their population to either direction" (Sorokin, 1994: 18). Namely, the quality of population, who are educated, creative, spiritually lofty is a main strategic resource of social development of this and subsequent centuries. Thus, the success of social development is determined not by economic growth rates and material well-being of the population (in accordance with a so-called economical-centrist approach), but by the human potential development indicator and conditions of its realization. We must build our social, economic, migration, humanitarian, cultural, educational, ecological, and legislative policy, the Russian Federation (RF) President Putin noted, about the task of human potential development of Russia. And it must take place not only for the period from one election to other election, but for the long-term, in its full sense – historical perspective (<http://www.kremlin.ru>).

To measure human development is an extremely complex task since it (development) depends not only on the economic growth and the level of national income (although, the economic growth is still the most important source and means of human development, as well as national development as a whole), but in no small measure on the way these

resource opportunities are used. A turning moment in estimation of national development and the human being (national development is a function and an argument of human development) by definite vectors of social life began in 1990, when the Department on preparation of the Report on human development (DRHD) of the United Nations Development Program (UNDP) published its first Report on human development, which was underlain by the innovative concept of Mahbub-ul-Haq (Pakistan) and his close friend and colleague, an Indian – Nobel Laureate Amartya Sen, having worked in collaboration with other leading experts in the field of national development. When determining the human value, they took into account the Platonian and Aristotelian formats of happiness (Kosmin and Kosmina, 2015).

The concept of human development has acquired real delineations of epyhumanistic value, identified by Immanuel Kant, is one of the first to claim an absolute value of the human personality regardless of racial, national, and class identity. The human being, Kant writes in Critique of pure reason, is a goal in itself, that is, nobody (even God) can ever use them as a mere tool. The essence of the concept, stated in the first Report, consists mainly in overcoming the dominant and strict economic determinism, advocating linear dependence of trends of unemployment, poverty, disparity in incomes, satisfaction of base needs of population on the scales of the economic growth, being an inadequate, ambiguous, but dominant goal of society development. And therefore, in contrast to the rough, surrogate indicator of the gross national product, another indicator, as it has been already noted – the Index of human potential development – an estimated aggregated statistical indicator, was constructed, in which not

only the volumes of consumption of material wealth, but also the opportunities for human being development, provided by the systems of public health and education, are considered. The index of human potential development is calculated as an average arithmetic value of corresponding indices:

$$\text{HPDI} = \frac{1}{3} \left[\text{LEI} + \left(\frac{2}{3} * \text{ALI} + \frac{1}{3} * \text{GEI} \right) + \text{GDP} \right] \quad (1)$$

Let us present the algorithm of calculation of particular indices:

$$\text{LEI} = \frac{\text{LE}-25}{85-25}, \quad (2)$$

Where LE – anticipated life expectancy at birth;

$$\text{EI (index of the population education level)} = \frac{2}{3} * \text{ALI} + \frac{1}{3} * \text{GEI}, \quad (3)$$

Where ALI – adult literacy index;

GEI – index of the combined share of learners (general education index);

$$\text{GDP (income index)} = \frac{\log(\text{GDPpc}) - \log(100)}{\log(40000) - \log(100)}, \quad (4)$$

Where Log (GDPpc) – average annual income per capita.

HPDI clearly differentiates between income and human well-being. By measuring average achievements in public health, education and incomes, HPDI can provide a more complete picture of the condition (social development) of a country than merely measuring the income level.

Table 1. Indices of social development of G7 and BRICS countries (2015)

Country	Human development index (HDI)		Rating by GNP per capita	Rating by GNP per capita minus rating by HDI	Rating by life expectancy
	Value	Rating			
Great Britain	0.907	14	23	9	26
Germany	0.916	6	17	11	24
Italy	0.873	27	31	4	11
Canada	0.913	9	20	11	10
USA	0.915	8	11	3	30
France	0.888	22	26	4	5
Japan	0.891	20	27	7	2
Russia	0.798	50	49	-1	129
Brazil	0.755	75	74	-1	83
India	0.609	130	126	-4	117
China	0.727	90	83	-7	79
SAR	0.666	116	87	-29	184

Sources: (Human Development Report 2015; <http://hdr.undp.org>).

The above-mentioned difference among ranks of countries by HPDI and by income per capita indicates that in different countries, the results of the economic growth are transformed into the growth of the life quality of population, into the rise of the level of human development of their population with different degrees of successfulness (see Table 1). A positive difference between the GDP rating per capita and the rating by the index of human development is evidence of relatively successful and more rational use of the created material wealth in the interests of human development, while the negative difference indicates diametrically the opposite. The methodology of calculation of the human potential development index was specified and improved. Let us present the chronology of changing the methodology of calculation of the human development index, including that offered by specialists of DRHD of UNDP.

In the Report on human potential development in the Russian Federation for 2004 (Bobylev, 2004; Sulistyono & Fernandez, 2019), particular indices of HPID were supplemented with the index of the population poverty rate and the index of the common unemployment level (Sagrado, 1995, 2003). But this was not the best idea since the principle of correspondence to the uptrend of HPDI was violated (therefore, they were abolished). In Human Development Reports of 2006–2010, the calculation of the population education index changed: it was estimated by the level of adult literacy (adult literacy index) and by the number of learners in educational institutions (educational institution learner's index) (Human Development Report 2009; <http://hdr.undp.org>). In 2011, the calculation of the educational index changed. Now it is calculated as the mean arithmetic of the index of the average learning duration (limiting

value – 16 years) and the expected time of learning (limiting value – 18 years). Also, in the calculation of the income index, the limiting value (\$75 000) of the average annual income per capita increased. In the calculation of the composite index of human development, the geometric mean of particular indices is used:

$$HPI = \sqrt[3]{LEI \times EI \times GDR}. \tag{5}$$

The limited set of particular indicators of human development downplayed the instrumental significance of HDI, which encouraged conceptual intellectuals of different scientific structures, analytical journals to use other methods for constructing indicators and other analytic models of the well-being of different countries (Kosmin and Kolesnikov, 2013c). In 2011, the UNO General Assembly adopted legally non-binding resolution titled Happiness is a holistic approach to development. Immediately, all over the world, there was a surge of constructing not only so-called indices of happiness, technologies of happiness measurements, but also different lines of development of the so-called economic theory of happiness as a closer of the economic theory of well-being by A. Pigou. However, the methodology of determining the results of happiness measurements, The best country in the world, Worldwide happiness index, Triangle index of nation’s well-being, Prosperity index, Life quality index (assessed in numerical score – from 5 to 100 points) and other hard-to-measure indicators, was subjected to criticism on the part of a number of experts because in many cases it does not match the real state of affairs in the countries under study and indicates only a part of the much more complex situation. These indicators

are supposed to be far from being perfect and their applicability for political-economic usage is low (Kosmin and Kolesnikov, 2013a, 2013c). The latter determined the necessity of successive perfection of a very important means of enhancing awareness of human scale all over the world – a multidimensional index of human development. It is mainly a question of the necessity of the methodological reconstruction of calculation methods (numerical measurement) of particular indices of the composite HDI – life expectancy, education and income, as well as of its inclusion into the structure of additional indicators of human development and broadening the area of its usage.

3. RESULTS

In the existing model of the composite index of human development, the legitimacy of hypothetical indicators (life expectancy, expected years of schooling), used in its calculation, obliged to give place to real, statistical measurable, that is, having point estimation, indicators, must be disputed. The fact that the death rates are varying and arbitrary identifiable ones is evidence of correcting the state program Public health development, approved in 2014, in which the death rate was forecasted at the level of 11.4 per 1000 people in the period up to 2020. But in the new version, adopted by the Ministry of Health of the RF, the death rate will amount to 13 per 1000 people up to 2020. Aggravation of the forecast is accounted by the officials for population aging. The ambiguity of this indicator leads to the fact that, in its majority, estimations in this field do not go beyond the suppositions. The latter does not in the least prevent

from the search of other methods and techniques of determination of the actual life expectancy (and actual expectancy of the years of schooling).

Indicators of the average and expected years of schooling years of schooling should be abolished, and the initial variant of measuring education should be used. A complicated situation, concerning gross national product per capita, has arisen. It is overburdened with the fact that it is practically impossible to decline (withdraw), and therefore, it should not be shown up. This indicator is not worthy of special trust for the simple reason that it is frequently inflated with expenditures of the state budget for the liquidation of consequences of natural disasters, technogenic accidents and a number of other emergencies. It is more expedient to achieve a worthy living standard and to measure more precisely, using average income per capita of households (AICH) of population, or, which is more precise, to determine the living standard using available household incomes of population (using the average income per capita free of taxes and compulsory payments). Measurement and numerical expression of the proposed indicators of the worthy living standard will not require some new methods of data collection.

However, let us return to education. The greatest disadvantage of the used model of human development is an inability to estimate the intensity of working human life, real development of human capital, the efficiency of use and realization of opportunities and resources of the human body. This is related, first of all, to the argument (index) HDI, which is the most significant in the modern changed and swiftly changing world, – education not endowed with the ability to adequately

(objectively) reflect the level of accumulated and – which is the most preferable – realized (materialized) in the society knowledge as a dominating factor of social progress. The education index, calculated as an arithmetic mean of the index of the average years of schooling of the population, who are still receiving an education (in years), is presented as totally deficient in any instrument value. Besides the sole one – it fixes the duration of the investment process, the life duration of venture capital (creating both a demanded human potential, implying really educated people, and unclaimed mediocre potential of formally educated people, for whom only instrumental values are significant in contrast to terminal, cognitive ones) (Kosmin, 2012).

The education index in itself does not reflect the level of knowledge accumulated in society. The level of human development should consequently be estimated not only and not so much by education, but also, which is of special importance, by the results of conversion of education into different kinds of innovative activity. After all, under conditions of the information economy, knowledge economy, the decisive role in its development belongs to not just literate people, but creative ones as architects of creative economy – as well as project and constructive one. For a more comprehensive estimation of human development, it is necessary to include the composite index of technologies, calculated as an arithmetic mean of the index of science investment and the index of innovations, innovative activity into the formula of HDI calculation (Davoudi et al., 2018; Fartash et al., 2018). For calculation of the technology index, the method of construction of the composite latent indicator, which (method) allows revealing the real situation of each country, each region by the innovation indicator. In

correspondence with this, all indicators were converted into dimensionless indices (were normalized) by the formula of DRHD of UNDP, used for measurement of particular indices – arguments of the function of the composite index of human development (Kosmin et al., 2014; Kosmina, 2009). The algorithm of calculation of the adjusted HPDI index that is, complemented by the technology index (HPDI) is presented in Figure 1, which illustrates interdependence and interrelation of basic constituents of the human potential development index.

The introduction of the technology index into the method of $HPDI^T$ calculation as a mean arithmetic value of four indices ($HPDI^T = \frac{1}{4}$ (life expectancy index + education index + income index + technology index)) allowed determining the actual state of each entity of the Russian Federation (RF) by the level of human potential development. The results of conducted calculations of $HPDI^T$ concerning 79 RF entities, revealed its significant deviations from HPDI and, consequently, their different rank positions (see Table 2). A positive difference of ranks is evident of the fact that the regions are capable of operative restructuring, and their innovative breakthrough is based on the stable foundation of efficient institutes and powerful local authority, having become aware of the responsibility for innovative development and formation of intellectual territories. On the contrary, a negative difference of ranks is evident from the fact that in such areas as Omsk region, Tyumen region, the Republic of Tatarstan, etc. (Kosmina and Kosmin, 2013). The high technology sector is poorly developed, and the local community is concerned with the preservation of traditional values while information remains closed. Table 2 shows the significant re-ranking of the top 20 regions, according to the official

statistics and by the results of their revealed real state, after applying the technology index. The working load of the reconstructed indicator consists in the fact that it allows ranking all countries in the world and their regions by the criterion of the human development level, reached by them, more reasonably and credibly.

Table 2. Ranking of RF entities by HPDI and HPDI_T

Region	Rank by HPDI	Rank by HPDI^T	Difference between the ranks
1	2	3	4
Moscow	1	1	0
Saint Petersburg	3	2	1
Nizhniy Novgorod region	35	3	32
Moscow region	40	4	36
Tomsk region	5	5	0
Novosibirsk region	16	6	10
Ulyanovsk region	47	7	40
Perm region	31	8	23
Samara region	10	9	1
Kaluga region	43	10	33
Tyumen region	2	11	-9
Republic of Tatarstan	4	12	-8
Russian Federation	13	13	0
Voronezh region	38	14	24
Krasnodar Territory	28	15	13
Sverdlovsk region	23	16	7
Chelyabinsk region	18	17	1
Omsk region	7	18	-11
Yaroslavl region	19	19	0
Republic of Bashkortostan	11	20	-9

Source: (Grigoryev and Bobylev, 2015; Kosmina, 2013; Kosmina and Kosmin, 2013).

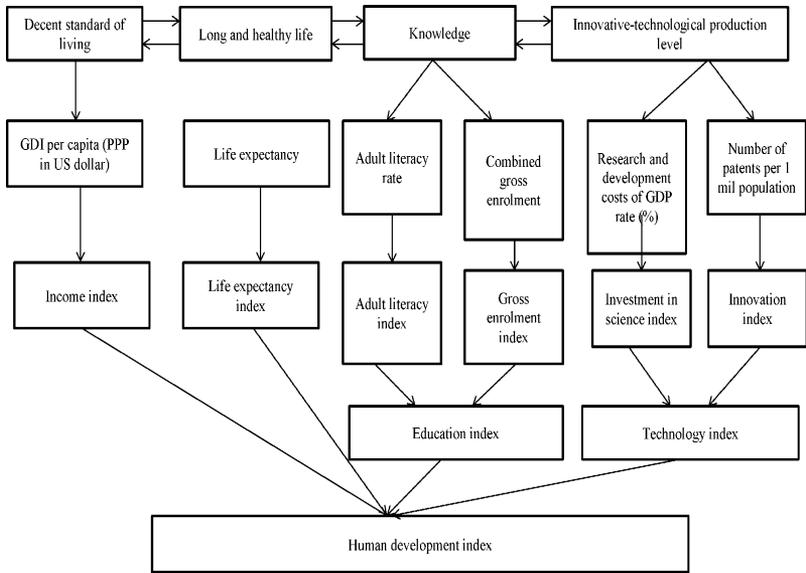


Fig. 1. Methodology of calculation of adjusted HPDI

The main critical argument is limited coverage of indicators of the used model of human development. For instance, it has none of the indicators, characterizing a spiritual constituent of human development. The source of intellectual enrichment of human life is, as the Report on human development of 2015 notes, the labor of artists, writers, musicians and other representatives of creative intelligence (the conclusion is based on the existing proof of the fact that in the 20th century, the teams of creative intelligentsia, as well as the authors and proponents of ethical theories (moral, virtue, etc.) – made a great contribution to increasing of the human development level (Kosmin, 2009). Hence, one should include the so-called Bohemia index (Florida, 2007) – the share of art workers of

the total population of the country, associated with the share of the population of the country in the total population of the world.

$$f b = \frac{\text{Share in country}}{\text{Share of population of country in total number of tellurians}}, \quad (6)$$

where the share of Bohemia in country = $\frac{\text{Number of artworkers}}{\text{Population size of country}}$; (7)

share of country population

in total world population = $\frac{\text{population size of country}}{\text{Population size of world}}$. (8)

Also, it was noted in the same report that labor activity, in which the population of the whole world takes part and which occupies a significant part of life, plays an important part in the enrichment of human life. Labor in its broad sense of the word is considered as noble and deserved serving since its instrumental role implies not only a source, means of subsistence and transformation of nature, creation of the use and extra cost necessary for meeting demands of the human being (this concerns only the sphere of cruel necessity), but, mainly, as a means of human development, their needs and capabilities, the essential and sufficient condition of personality self-realization (this is related to gaining freedom as a source of development) (Kosmin, 1994; Kosmina, 2008b). Certainly, labor is primarily treated as a gift, as an exclusive opportunity (environment, space) of all-round development of the human being (Kosmina, 2008c), long-term preservation of their physical and mental health.

The inclusion of labor as it is into the highest goal of social production (production of the human being – Marx) was proposed more than a quarter of a century ago (Kosmin, 1990; 1994). The function of reflection of comprehensive and profound interrelations between labor and the making up of a harmonious personality was delegated to the indicator of social-economic prestige of labor, representing such dynamic condition of the material process of labor, under which its capabilities in development and usage of human active abilities are enhanced. An instrumental role of the indicator of labor prestige consists in providing abilities to anticipate and plan the process of labor elevation and to realize the control over the process of achieving the real actual equality among people with respect to immediate production. The latter is an argument in favor of the inclusion of the indicator of labor prestige into the model of human development at the micro- and macro-levels. The inclusion of additional indicators (components of human life) into the model of human development (into the composite index of human development) will naturally demand sober, comparable and reliable data, obtained as a result of a combination of traditional and new methods of data collection in the course of population census and microcensus.

Another critical argument is a narrowed horizon (area) of HDI use. The world and nation-wide indicator occasionally mask significant differences among separate regions, and in regions – among different spheres of life activity and separate units constituting them. Broadening of the areal of HDI use will enhance its status and instrumental value significantly. And inasmuch as real opportunities for human development are provided by the system of public health, education, culture and

science, the numerically expressed awareness about human potential development, engaged in these systems (spheres), comes to the fore, which does not mean its (HDI) nonapplicability in other spheres of human activity. The model of the human development index, for the first time constructed in 1990 in the first Report on human development, prepared by the experts of the Department on preparation of the Report on human development for the United Nations Development Program, can be used in comparative analysis of achievements of different organizations, departments, separate members of society in development of their human potential. For example, when attesting, accrediting and determining the rating of higher schools, instead of comparing a multitude of accrediting, attesting indicators, let us use the only one – the index of human development of higher school, which is calculated (index) by the following directions:

- Health and longevity, measured by the indicator of the achieved average life expectancy of the teaching staff (TS);

- Capability to acquire knowledge, measured by the share of the number of persons, having postgraduate education in the total number of the teaching staff;

- The creativity of the teaching staff, measured by their publication activity per each inter-accreditation period (or per each year);

- Capability to achieve a decent standard of living, measured by the average salary of the teaching staff.

These four measurements should be standardized in the form of numerical values from 0 to 1, the geometric middling of which will represent a composite indicator – the human development index (HDI) of a higher school for a definite period of time in the range from 0 to 1:

$$I_{hd} = \sqrt[4]{I_1 * I_2 * I_3 * I_4}, \tag{9}$$

Where I_1 – index of the point-measured indicator of life expectancy, calculated by the formula of the Department on preparation of the Report on human development of the United Nations Development Program (DRHDUNDP):

$$I_1 = \frac{X_1 - 20}{85 - 20} \tag{10}$$

Where X_1 - average age of TS;

I_2 – Index of talent, intellectual potential, calculated as a relation of the number of persons, having postgraduate education, to the total number of TS:

$$I_2 = \frac{Q_{bachelors, masters, post-graduates, PhD, and other research workers}}{TSnumber}; \tag{11}$$

I_3 – creativity index, calculated as a ratio of the quantity of the published monographs, textbooks, manuals, papers in journals, recommended by the Supreme Attestation Commission of the Ministry of

Education and Science of RF, as well as papers, published in foreign journals, including those indexed in Scopus, TOC Premier bases, etc., patents, obtained per inter-accreditation period (or per year) to the total number of TS:

$$f_3 = \frac{\text{Indicator of publication activity}}{\text{TS number}}; \quad (12)$$

f₄ – Income index, calculated by the formula of DRHD of UNDP:

$$f_4 = \frac{X_4 - 2LW \text{ (living wage)}}{11LW - 2LW}. \quad (13)$$

Similarly, it is possible to calculate the human development index of the organization department, its separate employee by the first, third, and fourth indices. By the dynamics of the human development index of higher school, its subdivisions and its individual person, belonging to TS (especially by the particular index of creativity), it will be possible to estimate whether the person creates their personality (N. Berdyaev), becomes stagnated or degraded, on the one hand, and by which of the trend vectors the higher school functions – by the upward or downward one, on the other hand. Thus, higher school and its residents receive numerical identification, which is in modern conditions necessary and sufficient for making corresponding administrative decisions. The suggested other variant of the model of the human development index can be used for, probably, determination of not yet completely used potential of people of the third-age group (not anticipated age, but actually attained – older than 60 years old), who are definitely enriched with a sufficiently high level of knowledge, skills, and experience, and having certain

achievements, hence, worth returning to social production alongside with blue- and white-collar workers in a status of grey-collar workers. This would be both equitable and timely event under conditions of statistically accentuated worldwide trend of the reduction of the number of able-bodied population (by means of grey-collar workers it (trend) is possible to weaken and even neutralize (Kosmina and Kosmin, 2016).

4. DISCUSSION

Progress in the field of formation, preservation and development of human potential is largely reduced to the establishment of conditions (their determination), developing primary, given by nature, and secondary, acquired in society, capabilities for productive (in all senses) life activity. In other words, foundations, prerequisites, on the basis of which the human being is cultivated, ripens with their capabilities for creative activity, are necessary (Kosmina, 2008a). Many Reports on Human Development emphasize that the human potential depends on the level of production, but by no means is an automatic consequence of economic growth. So that the latter enabled the human development, it is also necessary to have an equitable distribution of the gross national product and economic opportunities, provision of employment, eradication of poverty and indigence (Kosmina, 2008c), achievement of equality of men and women, equal access to the spheres, forming the base human potential (free education and health service), narrowing the gap between the incomes of the prosperous and poor strata of society up to the threshold of social safety (which was successfully overcome since the accomplished

revolution of the 90-s of the last century, but steadily and permanently surpassed under the modern conditions of enrichment of the rich and the reduction of incomes of the poor (Kosmin and Kolesnikov, 2013a, 2013b). In this case, the movement starts from society, state and economy to the human being. Economic abundance, first of all, allows the human being to develop their capabilities, to widen the choice of relevant functional vectors and potential capabilities.

But when the problem of realization of human potential arises, the movement proceeds in the reverse direction – from the human being to society, economy, and state. The accents are shifted from the analysis of conditions, necessary and sufficient for formation, preservation and development of human potential to human activity, to self-composition (in the production of the human being, an exclusively important role belongs to the human being, with their permanent dissatisfaction with oneself, encouraging for self-perfection and desire to work, study selflessly throughout their life, to self-expression of the human being, revealing their capabilities, level of their knowledge and abilities, culture and other personal qualities of the human being (Kosmin, 2000). However, the accumulated human potential, as a rule, cannot be fully realized because of both its insufficient importance and owing to limitedness of favorable conditions (for example, because of the absence of the mode of the most favored nation treatment for vertical mobility of citizens, possessing social formal resources – social capital, as well as sufficient intellectual and cultural capital) (Kosmin, 2012). But it (human potential) must be correctly identified in any case. And this, as expected, is possible only under the condition of abolishment of the methodology of calculation of the multidimensional index of human development, having been applied

since 2011, and returning back to the methodology of its calculation, applied before 2010 and based on the additive theory of numbers, according to which additive values (properties) are the values (properties), connected with the physical object (including the human being) so that the value, corresponding to the whole object, is always equal to the sum of values, of its corresponding parts, whichever way the object is disintegrated into parts irrespective of their total number. The human being is a complex open and multidimensional system, consisting of a multitude of subsystems, the collective estimate of which in different periods will give the holistic idea about the exiting trend of human development, about the richness of human life – about health, knowledge, and decent living standard.

The synergetic approach to estimation of the human development index, revealing itself in the form of the multiplicative effect, is unlikely to be substantiated and logically legitimate since multiplication of the values of particular indices, composing the multidimensional index of human development, results at the output in a less effect (property) as compared to the additive approach, by which the change of the human development index represents the sum of changes of its separate parts. In this case, multiplicativity differs from additivity not only by the fact that separate effects, properties are not summed, but multiplied, but also by the less value of the revealed effect, property of the whole object, i.e. the human development index (interaction is not a product). The main disadvantage of the complicated algorithm of the human development index (as a geometric middling of three particular indices) consists in the fact that further widening of the components of the human development

index will make the procedure of such calculation even more complicated (it will be as difficult to calculate it as to drink the sea) and, consequently, it will not be possible to avoid gross errors. Otherwise, this algorithm has a limited potential of practical application beyond the developers of the Report (DRHD). And since human development is their upward movement along the vector of unlimited perfection, accompanied by cognition of oneself and realizing that beyond the physical, external beauty, they must see the beauty of the Sole and Reason and, finally, Divine beauty, the estimation of human development is impossible without the same unlimited widening of components – indicators, particular indices, as well as its current algorithm of calculation is either impossible (it is doomed for exclusion from the estimation instruments).

5. CONCLUSION

The human development index is a dynamic model with time-varying parameters (properties), by means of which the possibility of monitoring the changes in the real life of the human being is attained. For enhancement of the instrumental significance of the human development index, for more adequate reflection of the process of human perfection (implying transition of a human being into a new quality), constant accumulation of the quantity of its particular indices, representing a wider range of possibilities choice of human development, is obligatory and objectively stipulated. This fully agrees with the law of the increase of emergence – a generic feature of complex systems, to which the human being belongs – being another, more developed form of dialectic law expression about the quantity-to-quality transition. That is, the more the

elements in any complex system, the more arguments-indicators in the human development model, the greater the share of all information, contained in them, is made up by the system information about the human being. Thus, the concept of human development, deepening awareness about the human measurement of development in today's world, is much more urgent than earlier for the discourse about development and as an indicator of well-being, and as an indicator of the achieved (and achievable) higher level of human perfection and the surrounding world, based on deeper cognition and usage of the laws of nature and society development.

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