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DISPROPORTIONALITY IN HUMAN WELFARE INDICATORS AS AN ECONOMIC PSEUDO-SECURITY DRIVER

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Abstract

Support of a territory's economic security is reduced to achieving parity between public and private interests and priorities. The correlation between macro- and microprocesses has predetermined the study's objective, which is to develop a system of criteria to assess human welfare, which makes it possible to establish the population satisfaction determining the safety of the entire-ty of economic entities. Indicators that distort the social and economic picture form a false judgment about the territory's immunity to threats; therefore, it is essential to search for criteria aimed at distinguishing safe, conditionally safe, pseudo-safe dangerous state of the economy. Accessibility of benefits to the regional communities is revealed using the statistical analysis techniques, with the critical place among them given to indicative analysis, i.e., selecting "signal" criteria for tracking the borderline states of the territory's economy. The existing approaches that determine households' well-being are based on absolute and relative indicators calculated per capita. This viewpoint does not always reliably describe a local socio-economic picture, while the use of tempo indicators and their paired ratios becomes expedient. The system of indicators developed will contribute to a more objective assessment of personal well-being, since it considers the rate of change of key indicators, which describes level and quality of life, and establishes the proportionality of the needs for benefits and the capabilities of an individual.

1. Introduction

In the life-cycle process, macro- and micro-entities pursue certain objectives that often run contrary to other economic agents' interests and priorities, which contributes to the generation of economic states that threaten the development of the individual, society, and the state. Stable links between the state, business entities, and households predetermines the importance of achieving parity between their needs, with due regard for the parties' existing capabilities. In turn, disregard of the needs of any of the listed groups will lead to disequilibrium in the national economy, while achieving maximum effect, despite deteriorating social and economic situation of each individual and society as a whole, is usually temporary, and such tactics may lead to long-term de-stabilization of the reproductive cycle phases. In this regard, it is important that satisfaction with certain benefits be ensured, sufficient for the full functioning of economic entities, with a focus on the needs of the individual, since at different periods of existence he or she is expressly dependent on the actions, decisions made by the state and business entities, and affecting his or her well-being. However, the fact should not be neglected that an individual has a resource indispensable for production at the current stage of technological development due to the prevalence of mechanization over automation and needs that act as an incentive for economic activity. Consequently, private interests are a key object of protection in the system supporting economic security.

Often, when assessing the national economy immunity to a variety of threats, the issues of performance of enterprises are touched upon (by calculating aggregate indicators characterizing entrepreneurial, investment, and innovative activity), as well the issues of financial independence of socio-territorial entities (through a study of inflows to structural elements of the budget system, inflationary processes), but at the same time, measuring the level and quality of life of the population is limited to a set of absolute or relative values per capita. At the same time, it should be noted that in recent years in the Russian Federation, average per capita income has been on an upward trend, subsistence minimum, social benefits increasing, the consumer price index stabilized, which can be unambiguously interpreted as an increase in individual wealth, however, in the regional con-text, the facts give a markedly different socio-economic picture, if evaluated through the prism of natural and mechanical movement of the population. With the growing prosperity, many constituent entities of the Federation demonstrate a drastic fall in the number of residents resulted from both migration and decline in the birth rate, which indirectly confirms that the living conditions on their territory are uncomfortable, including due to the low level and quality of life compared to others. This trend signals a transition from a safe state of the local economy to a conditionally safe or pseudo-safe, which in the future will grow into a dangerous one, if measures to reduce interregional socio-economic differentiation are abandoned.

In this regard, a different approach to determining the degree of satisfaction of an individual's interests should be proposed, based on the use of parameters useful for tracking the transition between states, to prevent the aggravation of all groups' situation of economic entities. The aggregate of the above circumstances has predetermined the purpose and objectives of the study, primarily focusing on developing a system of indicators that makes it possible to identify the presence (absence) of disparities in the provision of material and non-material benefits of the population of a social-territorial entity.

2. Problem Statement

Independent individuals and their groups united into households are the primary assets to be protected in terms of security of the territory's economy since they are granted with a dual status within the frame of economic relations: primarily, these are the most important resource used for the production of the great variety of goods and services, the lack of which will inevitably entail a search outside followed by outsourcing; secondarily, they represent the consumer, for whose sake the process of creating economic benefits is carried out under the influence of the variability of needs. Therefore, an adverse change in their welfare may cause the development of destructive phenomena in the economy, affecting interests both of the state and of economic entities: on the one hand, through a shortage of labor outflowing outside the social-territorial entity for more comfortable living environment, on the other hand, following a decrease in consumer demand due to decline in effective earnings, which leads to a drop in supply, curtailment of production, disequilibrium in centralized monetary funds, and, finally, to the emergence and spread of factors threatening economic security.

Thus, studying the satisfaction of an individual's needs takes on special significance in the context of protection of private and public interests against harmful activities. At the same time, the absolute and relative statistical values remain standard tools of the study. However, it is possible to assess the level and quality of life of the population objectively by expanding the list of marker indicators at the expense of tempo indicators and their paired ratios signaling a change in dynamics, which is important from the viewpoint of the development of conditionally safe and pseudo-safe states of economy, which are borderline in terms of protection against threats (Figure 1).
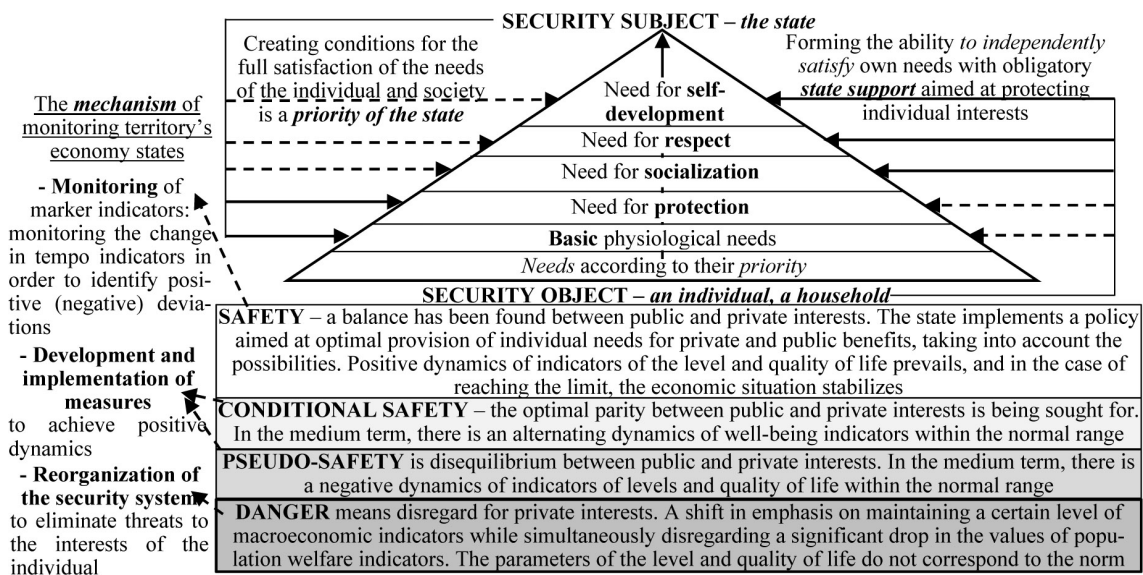
Figure 1. Interrelation between the states of economy according to the indicator of protection against threats and satisfaction with an individual's needs

Thus, the development of a system of "signalling" criteria in the field of population well-being, based on the preferential use of tempo indicators, will allow tracking the beginning of the period of replacement of positive trends with negative ones, and vice versa.

3. Research Questions

Human capital, which combines knowledge, health, experience, skills that increase labor efficiency (Bulina et al., 2020), is the foundation for economic development. However, an individual should be perceived not only as a person of labor, when the state focuses on protecting labor relations through the regulation of employment, introduction of a socially guaranteed minimum, redistribution of income (Buzgalin & Kolganov, 2016), or the intangible resource of the territory, with its quantitative and qualitative sufficiency favored (Fursov et al., 2018; Mikhalkina & Kosolapova, 2018), but also as a person who has a number of needs, the dissatisfaction of which can impede the full implementation of the labor function, and over the course of time, lead to negative activities that threaten the economic security of the state.

A large number of studies in the field of household well-being are focused on objectives other than determining the degree of protection of personal interests against threats, giving preference to analysis in the context of macroeconomic problems such as population inequality in monetary (Anisimova, 2016; Ovchinnikov & Malkina, 2019) and non-monetary dimensions (Karavay, 2019); poverty (Slobodenyuk & Anikin, 2018); informal employment and its impact on the provision of social guarantees (Veredyuk, 2016) and the scale of the shadow economy expansion in personal income (Murashov & Ratnikova, 2017; Nivorozhkina, 2016); the impact of social imperatives on sustainable development (Kanaeva, 2018).

At the same time, it is necessary to note that approaches to identifying the satisfaction of the population's needs in material and non-material benefits are multidirectional. Thus, the authors of some works focus on tracking the value of household consumption, that is, the choice is made in favor of considering consumer spending rather than cash income (Nivorozhkina, 2016), other authors emphasize the investment and saving behavior of an individual (Nikolaychuk & Nureev, 2020), and others – on specific parameters of the quality of life, for example, availability of information and telecommunication technologies and their impact on human life (Litvintseva et al., 2019), rationality of attitudes towards health (Rozmainsky & Osipova, 2020).

Comprehensive assessments of the level and quality of life, based on the calculation of aggregated coefficients (such as human development index, general progress indicator), and multifactorial welfare functions warrant attention, where the indices of idle time, life expectancy, housing per capita, and net savings are used as independent variables (Malkina, 2016). However, despite the versatility determined by parallel use of indicators of financial solvency and social satisfaction, this approach does not provide insight into the nature of the ratio between basic paired indicators of well-being, such as income-expenses or savings-borrowings.

The issues of proportionality of the indicators of household welfare are not given pride of place, therefore, the development of a group of criteria reflecting the level of satisfaction of individual needs, based on tempo coefficients and their comparison, is required to assess the identity of the needs for economic benefits and the potential for their provision, both in private and social context, which potential is predetermined by the development of the local economy and social infrastructure.

4. Purpose of the Study

The purpose of the study is to develop a system of measures of wellbeing of the population, which makes it possible to ascertain the degree of satisfaction of the needs of people, the safety of economic entities depends on.

5. Research Methods

As part of the study, many statistical analysis methods were employed, including absolute and relative statistical values, time series, and ranking. However, the work is primarily based on indicative analysis techniques. Thus, the marker parameters have been selected (Table 1) to monitor the intermediate states of the economy of the territory in terms of protection against threats, viz. conditionally safe and pseudo-safe states (as an object of ensuring economic security, the household (individual) acts as an object of economic security). At the same time, the list includes tempo indicators rather than point ones, including their paired ratios, used to track not only the dynamics of the coefficient itself, but also to assess the proportionality of changes in its constituent parts, which is the advantage of this approach.

6. Findings

Analysis of the values of the absolute indicators of the level and quality of life of people in the constituent entities of the Russian Federation has revealed their clear positive dynamics testifying for growing ability of the households to meet their own needs, however, this approach leaves out proportionality of changes in a number of absolute statistical values that exert mutual influence on socio-economic status of the households. For instance, in 2018, average per capita income in the regions exceeds average per capita expenses (with the exception of the Tyumen Region), which indicates the ability to save, while both indicators show increase in most regions. At the same time, to assess the potential for saving, it is important to realize what the increment of growth of each of them is: if income grows faster than expenses, then it is not unreasonable to talk about an increase in the well-being of individuals, while the opposite situation indicates its decline. In comparison, the increment of growth in these parameters shows that in 2018, only 9 regions demonstrated a positive rate, while from 2014 to 2018, this ratio was positive in less than half of the regions. In this regard, tempo indicators and their paired values provide the optimal tool to identify an unbiased picture of satisfying individual needs and protecting individual interests (Refer to Table 1): their standard value is set to one, which, and any deviation in one direction or another will be indicative of whether there is disproportionality between the structural elements of the coefficient.

The first part of Table 1 includes a set of measures used to determine the nature of changes in the standard of living, while the second one lists the criteria to judge the quality of life of the community in the region; at the same time, the significance of material security indicators is worth mentioning, since a number of social needs can be met at the own expense (e.g. educational, medical, and other services).

Table 1. The marking indicators that describe changes in the standard of living and quality of life of the population

№	Indicator	Formula	Standard value	Economic status of the household
Part 1 – Marker indicators that characterize shift in the level of well-being of the population				
1.1	Ratio between rates of change in household income and expenses	Rate of change in household income / Rate of change in household expenses	≥ 1	The ability to satisfy own needs and to save assets
1.2	Ratio between rates of change in household income and scope of per capita chargeable services	Rate of change in household income / Rate of change in the scope of per capita chargeable services	≥ 1	
a.	Ratio between rates of change in household income, %, and consumer price index	Rate of change in the subsistence level, % / consumer price index	≥ 1	Sufficiency of the subsistence minimum to meet the survival needs
1.3	Ratio between rates of change in household income and subsistence level	Rate of change in household income / Rate of subsistence level	≥ 1	
a.	Rate of change in the share of expenses for food	Share of expenses for food for the reporting period / Share of expenses for food for the reference period	< 1	Positive change in the construction structure in favor of the increased satisfaction with normal goods
b.	Rate of change in the consumption of cereals per capita	Cereal consumption per capita for the reporting period / Cereal consumption per capita for the reference period	< 1	
c.	Rate of change in the consumption of vegetable oil per capita	Consumption of vegetable oil per capita for the reporting period / Consumption of vegetable oil per capita for the reference period	< 1	
1.4	Ratio between the rate of change in outstanding loans in Rubles, per head, and household income	Rate of change in outstanding loans in Rubles per head / Rate of change in household income	≤ 1	Lowering the loan debt burden, satisfaction of needs at own expense
1.5	Ratio between the rate of change in deposits in Rubles and outstanding loans in Rubles	Rate of change in deposits in Rubles per head/ Rate of change in outstanding loans in Rubles per head	≥ 1	Increasing ability for saving

Part 2 – Marker indicators that reflect change in the satisfaction of social needs

Marker indicators of satisfaction of **educational needs**

№	Indicator	Formula	Standard value	Economic status of the household
2.1	Rate of change in the accessibility of pre-school educational organizations	Rate of change in the number of pre-school educational organizations / Rate of change in the number of pupils in pre-school educational organizations	≥ 1	Increasing the availability of educational space for the population
2.2	Rate of change in the accessibility of schools	Rate of change in the number of schools / Rate of change in the number of pupils at schools	≥ 1	
a.	Rate of change in the accessibility of teaching staff	Rate of change in the number of teachers in schools / Rate of change in the number of pupils at schools	≥ 1	

| 2.3 | Rate of change in the accessibility of vocational educational organizations | Rate of change in the number of vocational educational organizations / Rate of change in the number of graduates from schools | ≥ 1 | |

Marker indicators of the satisfaction of **healthcare needs**

2.4	Rate of change in the accessibility of doctors	Rate of change in the number of doctors of all specialties/ Rate of change in the incidence	≥ 1	Increasing the availability of medical services
a.	Rate of change in the accessibility of hospital beds	Number of hospital beds per 10,000 heads for the reporting period / Number of hospital beds per 10,000 heads for the reference period	≥ 1	Correlation of indicators – an increase in one with a decrease in the other – indicates a change in the approach to the provision of medical care
b.	Rate of change in the accessibility of outpatient and policlinic facilities	Outpatient and policlinic facilities per 10,000 heads for the reporting period / Outpatient and policlinic facilities per 10,000 heads for the reference period	≥ 1	

Marker indicators of the satisfaction of **recreational needs**

| 2.5 | Rate of change in the needs for tourism services | Rate of change in the number of travel companies / Rate of change in the population | ≥ 1 | Increased needs for tourism |
| 2.6 | Rate of change in the availability of plane sports facilities | Rate of change in the number of plane sports facilities / Rate of change in the population | ≥ 1 | Increased availability of mass sports |

Marker indicators of the population **social protection**

| 2.7 | Rate of change in the share of social benefits and welfare payments in the social assistance structure | Share of social benefits and welfare payments for the reporting period / Share of social benefits and welfare payments for the reference period | ≥ 1 | Growth in certain kind of social assistance |

Marker indicators of **public safety in the living environment**

2.8	Rate of change in the degree of protection against crimes against life	Rate of change in the number of registered murders and attempted murders / Rate of change in the population	≤ 1	Personal safety improving
2.9	Rate of change in the proportion of captured and neutralized air pollutants	Share of captured and neutralized air pollutants for the reporting period / Share of captured and neutralized air pollutants for the reference period	≥ 1	Environmental safety improving
2.10	Rate of change in the volume of discharge of contaminated wastewater into surface water bodies	Volume of discharge of contaminated wastewater for the reporting period / Volume of discharge of contaminated wastewater for the reference period	≤ 1	

In general, the calculation of the set of the above criteria over the medium term and its comparison with the "threshold" value will provide further insight into the likelihood of conditionally safe (alternating compliance with the norm) and pseudo-safe (constant non-compliance with the norm) states of the territory's economy.

To identify the real patterns in the field of protecting the socio-economic interests of the individual, an aggregate of indicators has been calculated, which reflect the level and quality of life of the

population in the regions of the Russian Federation, with the summarized results presented in Figures 2 and 3.

At the initial stage, the criteria listed in Table 1 were calculated for the period from 2014 to 2018 for the constituent entities of the Federation, and therefore the data set obtained is considerable. To present the calculations in a most convenient way, the indicators were assigned a certain point: for the value corresponding to the declared standard, it is one, otherwise, it is zero. Further, the total score was calculated for each coefficient for five years; if the region wins five points, it can be characterized as a leader, in the case of zero it should be considered under outsiders. An intermediate result from one to four testifies to the unstable dynamics of these indicators: positive shifts are replaced by negative ones, and vice versa.

Figure 2 provides the summary result of calculations of the welfare indicators proposed for use, to reach a finding about the financial self-sufficiency of households in the regions of Russia.

	Indicator	
	1. Ratio between rates of change in household income and expenses	
St. Petersburg	no	
	2. Ratio between rates of change in household income and scope of per capita chargeable services	
no	Krasnodar Terr., Sverdlovsk Reg.	
	a. Ratio between rates of change in household income, %, and consumer price index	
Astrakhan Reg., Rep. of Tatarstan	no	
	3. Ratio between rates of change in household income and subsistence level	
Sakhalin Reg.	Kaliningrad Reg., Astrakhan Reg., Rep. of Tatarstan, Nizhny Novgorod Reg., Omsk Reg., Trans-Baikal Terr.	
	a. Rate of change in the share of expenses for food	
no	no	
	b. Rate of change in the consumption of cereals per capita	
Chelyabinsk Reg., Altai Terr., Jewish Autonomous Reg.	Kursk Reg., Orel Reg., Tula Reg., Rep. of Karelia, Rep. of Adygeya, Rep. of Kalmykia, Rep. of North Ossetia, Chechen Rep., Rep. of Mordovia, Udmurtian Rep., Saratov Reg., Tomsk Reg., Rep. of Sakha	
	c. Rate of change in the consumption of vegetable oil per capita	
Rep. of Altai	Voronezh Reg., Kostroma Reg., Orel Reg., Kaliningrad Reg., Krasnodar Terr., Rep. of Daghestan, Kabardino-Balkarian Rep., Chechen Rep., Rep. of Tatarstan, Udmurtian Rep., Chelyabinsk Reg, Magadan Reg.	
	4. Ratio between the rate of change in outstanding loans in Rubles, per head, and household income	
no	no	
	5. Ratio between the rate of change in deposits in Rubles and outstanding loans in Rubles	
no	no	

(Left margin: Leaders; Right margin: Outsiders)

Figure 2. The list of regions-leaders and regions-outsiders according to the marker indicators that characterize the change in human welfare

The data in Figure 2 indicate that there are no express leaders or outsiders in terms of a set of criteria that determine the level of human welfare. In addition, according to a number of coefficients, in no region of the Russian Federation the total score five or zero has been won, which con-firms that negative and positive trends change constantly. Such a situation corresponds to a conditionally safe or pseudo-safe (if the total score is zero) state of the regional economy.

Generally, most regions have the following socio-economic "picture": the population's ability to save has been reduced due to the disproportion in the rate of growth between income and expenses, deposits and borrowings in favor of the latter both in the first and in the second cases. Furthermore, the loan debt burden of individuals increases, which demonstrates a "cash gap" in satisfaction not only of normal goods, but even of basic needs. This thesis is supported by analysis of the specifying indicators. Thus, for example, the indicator "Rate of change in the share of expenses for food" describes the change

in the structure of personal costs in terms of adjusting the proportion of consumption of survival needs and normal goods. It is worth mentioning that the departure from the norm speaks for increased share of economic benefits aimed at the meeting basic needs, viz. the physiological need for food, in the composition of expenses; therefore, welfare of individuals is decreasing. At the same time, in 2016-2018, more than half of the regions of the Russian Federation showed an increase in the share of expenditures on food in the household budget, as compared to 2015, when the number of such entities was only 10.

Thus, human welfare in many regions is changeable, with constant fluctuations indicating the insecurity of individual interests in the face of macroeconomic fluctuations caused not only by a weak anti-cyclic policy pursued by the government, but also by heavy reliance of the national economy on external environment.

Of no less importance are the criteria that describe the quality of life of the population, since the development of social infrastructure has direct and indirect effects on health, life expectancy, self-development, and self-realization of the individual. Figure 3 summarizes the calculations of the indicators of availability of intangible benefits, which can serve as a basis for judgment on comfort of the local environment.

Indicator		
1. Rate of change in the accessibility of pre-school educational organizations		
no	Moscow, Moscow Reg., Kaliningrad Reg., Murmansk Reg., St. Petersburg, Rep. of Adygeya, Stavropol Terr., Rep. of Tatarstan, Nizhny Novgorod Reg., Penza Reg., Sverdlovsk Reg., Khanty-Mansi Autonomous Area, Yamal-Nenets Autonomous Area, Rep. of Sakha	
2. Rate of change in the accessibility of schools		
no	68 regions	
a. Rate of change in the accessibility of teaching staff		
no	56 regions	
3. Rate of change in the accessibility of vocational educational organizations		
no	Belgorod Reg., Tula Reg., Yaroslavl Reg., Murmansk Reg., Rostov Reg., Altai Terr., Khabarovsk Terr., Amur Reg.	
4. Rate of change in the accessibility of doctors		
Nenets Autonomous Area, Rep. of Ingushetia, Chechen Rep., Rep. of Tatarstan, Rep. of Sakha		Rep. of Karelia
a. Rate of change in the accessibility of hospital beds		
no	27 regions	
b. Rate of change in the accessibility of outpatient and policlinic facilities		
Vladimir Reg., Voronezh Reg., Ivanovo Reg., Tambov Reg., Tula Reg., Komi Rep, Arkhangelsk Reg., Pskov Reg., Rep. of Bashkortostan, Chuvash Rep., Primorye Terr.		Moscow Reg., Rep. of Tuva
5. Rate of change in the needs for tourism services		
no	no	
6. Rate of change in the availability of plane sports facilities		
Lipetsk Reg.	31 regions	
7. Rate of change in the share of social benefits and welfare payments in the social assistance structure		
St. Petersburg	Orel Reg., Pskov Reg., Rep. of Kalmykia, Rep. of Ingushetia, Chechen Rep., Chuvash Rep., Kirov Reg., Kurgan Reg., Rep. of Altai, Rep. of Khakassia	
8. Rate of change in the degree of protection against crimes against life		
Orel Reg., Krasnodar Terr., Orenburg Reg., Tyumen Reg., Chelyabinsk Reg., Primorye Terr.		no
9. Rate of change in the proportion of captured and neutralized air pollutants		
Khanty-Mansi Autonomous Area	Bryansk Reg., Kabardino-Balkarian Rep.	
10. The rate of change in the volume of discharge of contaminated wastewater into surface water bodies		
24 regions	no	

(Left side margin label: **Leaders**; Right side margin label: **Outsiders**)

Figure 3. The list of regions-leaders and regions-outsiders according to the marker indicators that reflect the change in satisfaction of social needs

The summary of the indicators of well-being of the region's social environment (Figure 3) point to the conclusion that there were no total leaders or outsiders in the period from 2014 to 2018 in terms of the total score calculated. By analogy to the previous figure, a number of "signalling" criteria showed no polar value (five or zero points). At the same time, attention should be paid to the low availability of educational and medical services in many constituent entities of the Russian Federation, as well as to the lack of freely available sports facilities in more than a third of the regions.

Therefore, from the viewpoint of the proportionality of human welfare indicators, the aggregate picture of the distribution of the constituent entities of the Federation speaks for the absence of territories that are absolutely attractive or absolutely unattractive; the socio-economic environment is unstable, i.e. it is characterized by both positive and negative changes.

Based on the developed system of "signalling" criteria, insight into the level and quality of life of the population in Russia's regions has been provided. The calculations confirm negative trends in satisfying individual needs for material and intangible benefits, disregarding which will aggravate other groups of economic entities. Since the interests of the individual are the object of protection against threats, the calculation of the proposed marker indicators of human welfare and monitoring their compliance with the "thresholds" will contribute to the timely detection of the causes of the development of borderline states of the economy, namely, conditionally safe and pseudo-safe states.

7. Conclusion

The compliance with the norm or deviation from it of the values of the recommended indicators – "markers" reflects the degree of protection of the interests of the individual from negative activities, the provision of which acts as a key priority in the development of a public-territorial entity, and therefore, one can judge the state of its economy as safe or transitional to dangerous. This approach to assessing the satisfaction of household needs features several notable aspects. First, it is characterized by complexity, since an aggregate of criteria, the level and quality of life of the population has been studied. Second, the use of tempo indicators and their paired ratios for these purposes allows for unbiased description of the individual welfare, revealing the patterns of socio-economic processes into which individuals are involved, identifying the most destructive aspects of the life of individuals, which, if neglected, can threat economic security of the territory. Third, the proposed marker indicators, when complying with or departing from a standard, reflect the level of protection of the interests of the individual against negative activities, which acts as a key priority in the development of a public-territorial entity, and therefore, may serve as a basis for judgment on the state of the economy as on safe or transitional to dangerous.

Acknowledgments

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