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**CORRELATION BETWEEN QUALITY OF LIFE AND  
ECONOMIC GROWTH AS INDICATORS REGIONAL  
DEVELOPMENT**

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### Abstract

The quality of life is one of the most important conditions for the socio-economic and political development of the territory. It has a major impact on the dynamics of the socio-economic development of the territory directly or indirectly. At the same time, this provision is not fulfilled in all respects. It is, first of all, that the quality of life as a synthetic concept has many facets and not all of its aspects equally stimulate the socio-economic development of the territory. In other words, some aspects are stimulated by some factors, others by others, and, as a whole, as a result of a peculiar synthesis of factors, the general result is the positive effect of the quality of life on the socio-economic development of the territory. It is about the fact that in some aspects, for example, the same per capita incomes or population structure, stimulate production activity in the regional economy, and, for example, the state of culture, ecology, etc. stimulate the general orientation (humanization) of regional development. In addition, this multiplicity is due to the fact that various aspects of the quality of life stimulate different aspects of the socio-economic system and, thereby, realize themselves through different sides of the regional system.

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## 1. Introduction

Gross regional product (GRP) is a general indicator of the economic activity of a region that characterizes the process of production of goods and services for final use. GRP is calculated at current basic prices (nominal volume of GRP), as well as at constant prices (real volume of GRP).

GRP is the gross value added of goods and services created by residents of the region and is defined as the difference between output and intermediate consumption. The indicator of GRP is in its economic content very close to the indicator of gross domestic product (GDP). However, there is a significant difference between the indicators of GDP (at the federal level) and GRP (at the regional level). The amount of gross regional products in Russia is not equivalent to GDP, because it does not include the added value of non-market collective services (defense, public administration, etc.) provided by state institutions to society as a whole.

Economic growth and gross regional product are designed to ensure the socio-economic development of the territory. Therefore, growth itself does not mean anything. Economic growth should stimulate the growth of the quality of life of the population of the territory (Greenberg, 2015). This requires assessing economic growth with quality of life parameters. Let us examine how economic growth influenced the dynamics of the main indicators of quality of life and how the level of quality of life influenced economic growth. First, we will assess the quality of life according to certain parameters, among which, first of all, we will assess the impact of per capita incomes of the population, the level of wages and pensions, the level of employment of the population, as well as the level of provision of the population with material and intangible benefits (food, household appliances, housing conditions, medical services, education, etc.) (Meadows & Meadows, 1994). After assessing the quality of life in individual areas and parameters, we will try to assess the so-called general level of quality of life using the integral indicator derived in the previous chapter. The per capita income indicator is one of the most important indicators of quality of life. Cash incomes of the population include income of entrepreneurs, paid wages of employees (accrued wages adjusted for changes in arrears), social benefits (pensions, allowances, scholarships, insurance indemnities and other payments), property income in the form of interest on deposits, securities, dividends and other income ("hidden" income, income from the sale of foreign currency, money transfers, as well as income that is not widely distributed ) Of course, there is no direct relationship between them, but, nevertheless, the level of per capita income in certain conditions (in a developing economy and a developing country; for developed countries, when the income level stabilizes and when a peculiar income saturation of the quality of life occurs, etc. e. when per capita incomes do not play a decisive role in the life of an individual, since the first place goes to the qualitative parameters of life related to leisure, education, culture, etc.) can even be accepted as a kind of criterion of qualities life (Pchelintsev et al., 2000).

## 2. Problem Statement

Consider the behavior of this indicator in the regions of the North Caucasus and its relationship (relationship) with the most important indicator of the level of economic development of the territory - the gross regional product. Available data allow us to highlight a number of features. First, there is a

widespread difference between the growth rate of per capita GRP and per capita income. It is, firstly, about temporary differences, and secondly, about spatial differences. It turns out that in most regions of the North Caucasus Federal District, the growth rate of per capita incomes was faster than the growth rate of per capita GRP. In addition, they were ahead of the average growth rate in the Russian Federation. So, if the average growth rate of per capita income in the Russian Federation was 0.43 points faster than the growth rate of per capita GRP, then the average in the North Caucasus Federal District is 2.39 points. But inside the North Caucasus Federal District in such regions as the CBD (+ 4.01), RI (+3.81), RD (+3.51), Stavropol Territory (+1.99), KCR (+1.69) and only North Ossetia Alanya (-0.11). The second is the spatial and temporal difference in the ratio between per capita GRP and per capita income. On average in the Russian Federation, this ratio over the decade amounted to 7.6 to 10 (i.e., the level of per capita income in per capita GRP is 76.5%), while on average in the North Caucasus Federal District - 121.1%, and in the Republic of Dagestan - 137, 2%, RI - 161.1%, CBD - 114.4%, KCR - 118.2%, North Ossetia-Alania - 126.4%, Stavropol region - 104.5%. In other words, in all regions of the North-Caucasian Federal District, the volume of per capita income exceeds (and in RI more than one and a half times) the volume of per capita GRP.

The dependence of the dynamics of GRP in the subjects of the North-Caucasian Federal District on the dynamics of per capita incomes was calculated. The calculations were carried out according to the procedure generally accepted in economic research. The data show that there is a strong correlation between per capita income and per capita GRP (for all regions, the paired private correlation coefficient between per capita GRP and per capita income exceeds 0.95; in addition, in four it exceeds 0.99, in one (RI) 0.976, and North Ossetia-Alania 0.986). Economically, the latter is explained as follows. The growth of per capita income stimulates the growth of expenditures of the population, rising expenditures stimulate the growth of production of goods and services, which, in turn, stimulate the flow of investments, etc. along the chain of economic and institutional relationships. Secondly, all subjects have positive regression coefficients. This means that with an increase in per capita income, there is an increase in per capita GRP; or an increase in per capita GRP is determined by an increase in per capita income. True, if there is no big discrepancy in the knowledge of coefficient A1 (the CBD has the lowest indicator (0.54) and the Stavropol Territory has the highest (0.77), the difference between them is 0.23, which means that the increase in per capita income by 1 point it gives approximately the same increase in per capita GRP, but there are strong differences in the A0 regression coefficient, it should be noted that the CBD has the highest zero coefficient (11948.7), which exceeds the RI coefficient (the lowest) by almost 14 times This feature will be considered by us below about.

An indication that per capita incomes are an important (and sometimes even the most important) factor in the growth of regional economies and at the same time one of the most important indicators and criteria of quality and standard of living at the stage of formation of a post-industrial society (and its needs) requires us to study the behavior of this parameter in more detail and deeply (Toffler & Toffler, 2008). That is, it is to determine what affects the dynamics (and overall behavior) of per capita income?

We will carry out a similar comparison procedure with gratuitous revenues to the revenues of the consolidated budget of subjects of the North-Caucasian Federal District.

Whether it depends on the dynamics of the GRP or else on some other macroeconomic parameters for the development of the territory is clearly impossible to say, as well as the fact that the volume of gratuitous receipts to the consolidated budget of the territory depends on the previous amount. No such dependencies were found. But, as noted in separate studies, the value of gratuitous transfers to the consolidated regional budgets showed dependence on the price of hydrocarbon resources, as well as federal budget revenues. However, in reality, there is an increase in revenues from the federal budget to the regional, and these volumes are actively corresponded with per capita incomes of the population.

### **3. Research Questions**

On the basis of the author's model of increasing the efficiency of the regional economy, to determine the mechanism for accelerating economic growth in the economies of the republics of the North Caucasus and Stavropol Territory.

To prove the prevailing role of such factors as the number of employees, gross regional product, investments, per capita income, etc., in ensuring economic growth in the Republic of Dagestan, Stavropol Territory.

Calculate the elasticity between factors that shows the different architecture of regional economies.

### **4. Purpose of the Study**

Consider the issues of the relationship between the quality of life and economic growth on the example of the subjects of the North Caucasian Federal District.

### **5. Research Methods**

In the course of the research, the methods of the systems approach, scientific abstraction, analogies and scientific generalizations were used. The methodological basis of the research is the fundamental economic theory, the theory of sustainable development of economic systems, the theory of population welfare, the theory of measuring and assessing the quality of life. The information base of the study was the data published in the statistical collections of the State Statistics Committee of Russia.

### **6. Findings**

A comparison of the growth rate of per capita income of the population with gratuitous revenues to the consolidated budget reveals a number of features. The first is that in certain regions (RD, RI, Stavropol Territory, and also partly North Ossetia-Alania), the growth of per capita incomes slightly correlates with the growth of donations.

In other regions (CBD, KCR), a high correlation is observed. The growth of gratuitous income stimulates the growth of per capita incomes, their decrease leads to a decline. The second - in the second group of regions there is a lag phenomenon (although it is noticeable for the first one), but if in the first group the fluctuations in the dynamics of per capita incomes with fluctuations in the dynamics of gratuitous transfers are conditionally random, then in the second group they are clearly regular.

Both observed dependences were verified by calculating the correlation between these factors and phenomena.

Several features are noteworthy. The first is that in all subjects of the North-Caucasian Federal District, per capita incomes correlate positively and strongly with budget revenues and with gratuitous transfers to the consolidated budget from the federal budget. The value of the correlation coefficient exceeds 0.95, and in some regions (KBR, KCR and the Stavropol Territory) even 0.99. This suggests that per capita incomes are highly dependent on consolidated budget revenues. Apparently, this dependence can be interpreted as the fact that there are many so-called state employees in the region, and the funds received from the budget turn out to be significant when forming the per capita budget of the population. (This assumption will be tested through wages and income from agriculture, industry, etc.). The second - in all subjects of the North-Caucasian Federal District, with the exception of the Kabardino-Balkarian Republic and the Republic of Dagestan, there is a difference in the value of the correlation coefficient between per capita income of the population and consolidated budget revenues and between per capita income of the population and gratuitous receipts from the federal center. (In the CBD and Dagestan, they are identical). Moreover, the power of correlation of per capita income of the population with the income of the consolidated budget everywhere turned out to be higher than the correlation of per capita income of the population with gratuitous revenues from the federal budget. In some subjects, for example, RI, these differences are negligible (+0.04), while in others it is quite noticeable (Stavropol Territory (+0.27), North Ossetia-Alania (+0.22), KCR (+0.13) ) This situation may indicate that in the formation of per capita incomes, the roll is being made towards its own income base, in contrast to those regions in which the main mechanism for generating incomes of the population lies in the plane of budgetary opportunities, and in them are gratuitous revenues.

To study the patterns and trends of regional development, a certain classification of regions and their socio-economic development is required (Ovchinnikov, 2010). Different studies offer different classification of regions. In particular, the differentiation of regions into independent and depressed, donor regions and recipient regions is quite often used. Such a classification, like any other, allows us to identify certain patterns and features in the regional development of Russia. At the same time, it obscures many other features of regional and subregional development. Therefore, we believe that the identification of new patterns, trends and characteristics needs perfect classifications. In a number of studies, it was proposed to classify regions by growth rate and development dynamics. It is proposed to distinguish three types of regions: dynamic with high development dynamics, moderate and stagnant. We believe that such a classification makes it possible to more correctly express many features of regional development, as well as to study many features at the subregional (municipal) level.

Based on this classification, let us consider the behavior of per capita incomes of the population and the factors that influence it, using the example of the North Caucasus Federal District. To assess the impact of factors, we divide the regions of the North-Caucasian Federal District into three groups: dynamically developing, to which we attribute regions whose growth rates over the past three to five years have remained stably high, i.e. above the aggregate average (North-West Federal District), moderate (regions, economic growth in which vary around the average in aggregate; within + 10% of the average) and stagnant (regions, in which economic growth rates are, firstly, unstable and, therefore, the

average annual growth rate is lower than the average annual growth rate in the Russian Federation, and secondly pace s growth is below the average for the aggregate (NCFD).

Calculations show that the per capita income of the population of a growing economy (for example, the economy of the Republic of Dagestan) correlates positively and strongly (only one parameter turned out to be below 0.9 — the level of economic activity of the population is 0.81) with the production and economic factors of the economic system. The greatest influence on the dynamics of per capita incomes was exerted by the per capita GRP (0.998), the volume of paid services to the population (0.997), the cost of fixed assets (0.996), the volume of construction work (0.995), investments in fixed assets (0.995), and consolidated budget revenues (0.992) , agricultural products (0.981), the average annual number of people employed in the economy (0.972) and completes the level of economic activity of the population (0.81). What is such a matrix talking about? In our opinion, first of all, that all sectors of the national economy: industry, agriculture, construction, transport, the service sector, as well as the household and budgetary sectors, are working in unison or, at least, there is no sharp lag. Although, at the same time, it should be noted that the population is employed in the services sector and therefore, the basis for the growth of per capita incomes of the population is formed in the services sector. The influence of the factor of fixed assets is great, which may mean an active modernization of the production and economic infrastructure of the regional economy. The regional economy is actively using consolidated budget revenues to increase per capita income. The volume of construction work and the volume of investments also actively influence the dynamics of per capita incomes of the population, obviously through employment.

In moderate economies (for example, the economy of the Stavropol Territory) per capita incomes showed a similar reaction to the behavior of the main parameters of production factors. True, in all respects, except for the volume of paid services to the population, the correlation coefficient turned out to be lower in these economies than in growing ones, although these differences were not so significant (basically, these were tenths and hundredths), but nonetheless turned out to be noticeable. Per capita incomes of stagnant economies demonstrate a completely different trend (on the example of the economy of the Kabardino-Balkarian Republic). Firstly, such a production factor as the average annual number of people employed in stagnant economies had a negative correlation with the per capita income of the population. Secondly, such an important parameter of economic development as the volume of investments in OK in stagnant economies is lower than in growing and moderate ones (Gurtuev et al., 2020). Thirdly, many parameters showed similar behavior to growing ones, but at the same time, their opposite effect is observed, which will manifest itself at the level of economic and social infrastructures (Table 1).

**Table 1.** The value of the correlation coefficients between showers income and factors of production and economic infrastructure regional economies

	Fast growing	moderately growing	stagnant
Average per capita cash income per month, rubles.	1	1	1
The proportion of urban population, %	-0,609	0,993	-0,228
The level of economic activity of the population; %	0,810	0,769	0,126
Number of own cars per 1000 people, pcs.	0,915	0,956	0,993
The number of enterprises, units	-0,791	-0,598	0,905

Sown area under crops, thousand ha	-0,759	0,690	-0,551
The density of public railways, per 10,000 square meters. km of territory	-0,676	-0,788	-0,607
Thickness of paved public roads; per 1000 square meters Km	0,897	0,725	0,898
The volume of communication services provided, per inhabitant, rub.	0,975	0,970	0,989
Registered mobile subscriber terminals; thousand	0,994	0,953	0,988
Retail turnover per capita, rub.	0,975	0,998	0,999
The turnover of public catering, million rubles	0,999	0,991	0,979
Volume of paid services to the population, million rubles	0,982	0,997	0,988
Volume of paid services per capita, rub.	0,997	0,987	0,989

However, in more detail about the factors that shape the dynamics of per capita incomes of the population can be obtained from assessing the state of production and economic and social infrastructures of the regional economy.

Calculations show the ambiguous and contradictory effect of individual production and economic factors on the dynamics of per capita income. In particular, such factors as: the level of economic activity, the number of own cars, the density of roads per 1000 square meters. km, the volume of provided communication services per capita, investments in fixed assets, registered mobile subscriber terminals, the volume of retail trade and public catering, as well as the volume of paid services to the population, had a positive, although unequal correlation with the per capita income of the population. But such parameters of industrial and economic infrastructure as: the proportion of the urban population, the number of enterprises, the size of the sown area, and the density of railways had a negative correlation with the per capita income of the population. This situation in the system of factors of production and economic infrastructure may mean that these parameters are not so actively included in the existing architecture of the regional economy (for example, the noticeable influence of mobile communication terminals, as well as the volume of communication services, suggests that in the regional economy the communication services sector is being formed, as well as the fact that agricultural land had a negative correlation, suggests that the traditional agriculture sector no longer provides an increase in per capita income), and the fact that a completely new architecture of the regional economy has not yet taken shape (Makhosheva et al., 2018). And therefore, in it, the coexistence of the old and the new production and economic infrastructures continues. As a result, there are constant collisions between the named sectors and sectors.

Calculations show that moderate economies had, firstly, opposite directions and the value of correlation coefficients with such factors as: the proportion of the urban population, sown area under crops, and secondly, the value in such parameters as: the number of cars per 1000 people, retail turnover, the volume of paid services to the population, as well as the number of enterprises were higher than those of growing ones, thirdly, in such parameters as: level of economic activity of the population, density of cars governmental roads, volume of rendered communication services, the number of subscriber terminals cellular rates are lower than in growing economies.

In stagnant economies, the tendency noted in the previous section was manifested - the repetition of the trends of a growing economy, but with lower (or higher) values of the correlation coefficients.

An important criterion for assessing the dynamics of per capita income and, in general, the quality of life in the region is the state of social infrastructure. Social infrastructure does not create products, but it creates the conditions for people to live; it acts as a factor shaping the conditions for the best or worst living of people in a given territory. Therefore, it is important to evaluate its impact on the main indicators of quality of life. As one of the indicators, we took the per capita income of the population. The calculations revealed the following trends for the three indicated types of regional economies (Table 2).

**Table 2.** The value of the correlation coefficients between showers income and factors of factors of social infrastructure regional economies

	Fast growing	moderately growing	stagnant
Average per capita cash income per month, rubles.	1	1	1
The volume of gratuitous transfers to the consolidated budget of the territory; million rubles	0,990	0,976	0,993
The average annual population, thousand people	0,902	-0,885	0,018
Natural growth rate per 1000 people	0,898	0,935	0,912
The migration growth rate per 10,000 people.	-0,662	-0,306	-0,676
The number of unemployed, thousand people	-0,735	-0,520	-0,195
The number of employees of state authorities and local governments, people	0,903	0,972	0,917
Average monthly nominal wage; rub.	0,996	0,997	0,998
The population with an income below the subsistence level; in% of the total population	-0,856	-0,903	-0,845
Consumer spending on average per capita, rub.	0,999	0,999	0,999
Number of own cars per 1000 people, pcs.	0,915	0,956	0,993
The total area of residential premises, per average per inhabitant; sq. m	0,952	0,983	0,958
Turnover of retail trade and public catering per capita, rub.	0,046	0,998	0,999
Consumer price index; %	0,999	-0,645	-0,400

The largest differences in the types of economies are observed in the third group of factors and conditions: industrial, economic and social infrastructure. The purchasing power (per capita income) of the population of growing economies was most strongly correlated with such parameters as: consumer spending, consumer price index (moreover, to the greatest extent with consumer prices for food, while in those stagnating with prices for services, and in moderate with prices for manufactured goods) average monthly salary, volume of gratuitous transfers from the federal budget, volume of housing per capita, etc. The purchasing power of the population in moderate economies was most dependent on: consumer spending, retail trade and public catering, average annual wages, living space per capita, volume of gratuitous transfers from the federal budget, natural growth rate, number of employees of state and municipal authorities, etc. .d. As for the purchasing power of the population of stagnant economies, their size depended on the following factors: the volume of gratuitous revenues from the federal budget, average monthly wages, consumer spending, public catering and retail sales, etc.

A negative correlation in growing economies was demonstrated by the purchasing power of the population with the population with incomes below the subsistence level, the number of unemployed, and the migration growth rate (Shnyper, 1993). A negligible correlation is observed with the turnover of retail trade and catering. In moderate economies, the purchasing power of the population shows a negative correlation with the population with incomes below the subsistence level (by the way, the highest, and

also the highest modulo), average annual population, unemployed, consumer price index, migration growth rate (which, by the way, is lower than that of growing ones) (Tumenova et al., 2018). In stagnant economies, the purchasing power of the population negatively correlates with factors such as: the population with incomes below the subsistence level (lower than growing and moderate ones), migration growth rate (by the way, one of the highest between economies), and consumer price index (higher than moderate) and the number of unemployed.

## 7. Conclusion

The analysis of the correlation and interrelation of the quality of life and regional economic growth showed, firstly, that there is a direct, but not linear dependence and relationship between the above phenomena: where there is a high quality of life, there is high or moderate economic growth, where there is low quality life, economic growth is unstable and low, and secondly, the production, economic and social factors that shape economic growth equally form the quality of life. True, they are not identical, because at a certain level of quality of life, structuring of its factors and parameters of influence on economic growth takes place. Sometimes it happens that those factors and parameters of the quality of life that formed economic growth in the previous structure either begin to slow it down or are indifferent to it. This feature is manifested on individual factors of economic growth and can be demonstrated by the example of investments and their relationship with the quality of life.

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