








# “Model of assessment of financial imbalances in regions of Ukraine”

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# MODEL OF ASSESSMENT OF FINANCIAL IMBALANCES IN REGIONS OF UKRAINE

## Abstract

The article analyzes the model of financial imbalances in the regions, which allows assessing the effects of implementing various options of the financial regional policy aimed at reducing the depth of the crisis in regional systems, smoothing cyclical fluctuations, leveling the levels of socioeconomic development of the territories.

The financial imbalances of regions of Ukraine are estimated on the basis such as indicators of gross regional product, gross regional product per capita, index of physical volume of gross regional product in comparative prices (in the prices of the previous year), economically active population by regions, population incomes, and level of capital investments by region. In the process of assessing the financial imbalances of the regions, a constant study of the structure of the fluctuations of the values of these indicators, was conducted determining the significance of each size in the overall structure and identifying the features of the system development in different ranges.

Based on the assessment of financial imbalances in the development of regions, the causes and consequences of significant imbalances in the economic system were identified, and directions for increasing the efficiency of regional policy were proposed. In turn, the assessment of financial imbalances in the regions makes it possible to consider the influence of factors on the development of regions, because in some cases, the regional socioeconomic system perceives positively, in others – negatively. Therefore, it must have elements that contribute to the transformation of its parameters in the conditions of changing environment and, at the same time, ensuring the maintenance of regional stability.

## Keywords

region, developmental imbalances, model of assessment, estimation of financial imbalances

## JEL Classification

C13, R13, R58

## INTRODUCTION

Today, the regional economic space of Ukraine is a complex, dynamic, open system, which creates the basis for the processes of inter-region alinteraction, integration and transformation processes.

Regional heterogeneity of sustainable development of the regions of the state is permissible only before a certain limit for which economic security is guaranteed countries and not ineffective interregional the transfer of capital, labor and other factors of production (Vakhovych, Kaminska, & Ropotan, 2015).

However, it should be noted that at the current stage, no international or domestic model for assessing financial imbalances in the region's development has been developed, and there is no consensus and scientific approaches. In literary sources, quantitative and qualitative methods are used to assess the development of regions (Vakhovych et al. 2015; Bilotserkivets & Zavorodnia, 2009; Pilko & Harda, 2017).

It should be noted that the issue of the development of economic, social and environmental processes in the work of scholars is highlighted, as a rule, at national and regional levels. At the same time, as noted in the paper of Pilko and Harda (2017), the corresponding development at the level of territorial systems of the region and the united territorial communities is practically absent.

The current stage of development of financial imbalances of regions is characterized by significant disproportions, the strengthening of which becomes one of the factors that destabilizes influence on levels of economic growth.

As scientists point out in their writings (Pepa, 2013; Krasnonosova & Yermolenko, 2013; Zheleznyakov & Risin, 2017; Vdovichen & Vdovichena, 2015), the general tendency of the development of regions in modern conditions is the deepening of all types of regional disproportions of the country's economic space, the growing contradiction between the formed territorial and sectoral structure of the economic complex of the country and its regions, and the needs for the creation of a competitive and highly productive system of social production (Pilko & Harda, 2018).

In Ukraine, the processes of assessing regional development are regulated by the Cabinet of Ministers Resolution "On the introduction of an assessment of the inter-regional and intra-regional differentiation of socio-economic development of regions" (Cabinet of Ministers of Ukraine, 2009). This methodology regulates the evaluation procedure as well as the comparative analysis of the socio-economic situation, the level and quality of life of the population with a view to adopting appropriate management decisions at the state, regional and local levels aimed at solving the problem of interregional and intra-regional asymmetry and the uneven socio-economic development from to prevent the development of processes that lead to a deepening of the differentiation and the formation of depressed territories (Cabinet of Ministers of Ukraine, 2009).

In accordance with this method, it is recommended to do the following:

- firstly, to identify the differences between the most prosperous and most problematic territorial systems and regions;
- secondly, to determine the intervals and nature of deviations of the values of socio-economic indicators of the studied territorial systems and regions from their mean value (Cabinet of Ministers of Ukraine, 2009).

To date, sustainable development of the regions is effective only when not only the theoretical provisions are developed, but also the authorities have put in place appropriate measures of influence on the territory of the regional system. An important aspect is the development of a methodology for assessing financial imbalances in the development of regions. This will enable the implementation of effective measures to enhance the internal capacity of the regions on the basis of a comprehensive analytical study of financial imbalances in the development of regions.

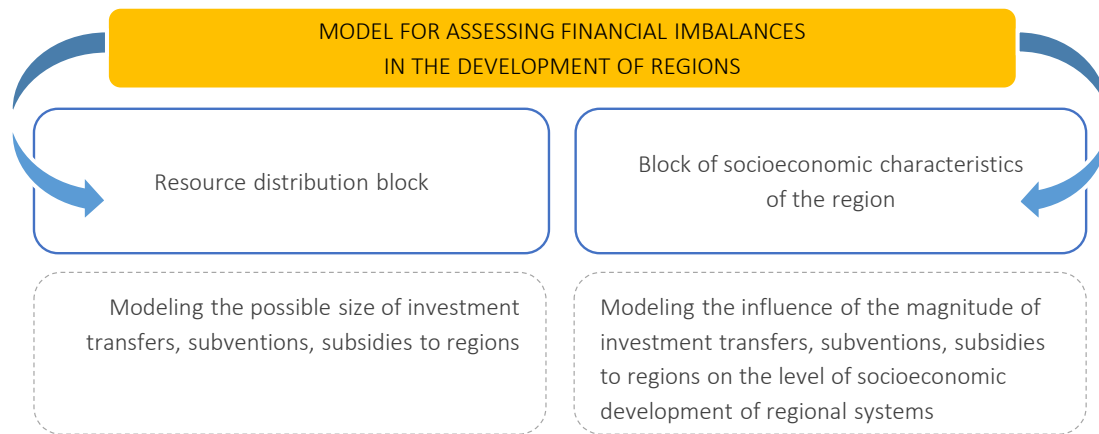
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## 1. THEORETICAL BASIS

In assessing the sustainability of regional development, taking into account the impact of economic, social, environmental and institutional factors is very important. In addition, the assessment of regional financial imbalances allows us to identify the tools, parts of mechanisms and mechanisms for managing the sustainability of the region's de-

velopment, which needs modernization. A comprehensive analysis of the socioeconomic situation in the regions and the assessment of the dynamics of sustainable development is also needed when solving problems of forecasting, planning, and implementation of the strategy of the regions, and comparing the achieved position with the set goals, and taking into account the degree of their achievement.

Source: Compiled by the author.



**Figure 1.** Model for assessing financial imbalances in the development of regions

The model for assessing financial imbalances in the development of regions includes two main blocks (Figure 1).

Thus, the model of financial regulation of the territories allows to carry out various forecast calculations of economic development of regions and the state depending on the adopted policy of state financial regulation (Ponomarenko, Kleybanova, & Kizima, 2011).

The decision to use one or another type of model is based on the Hausman test, which, however, often does not give a final answer to the correct choice (Khomyak, 2017).

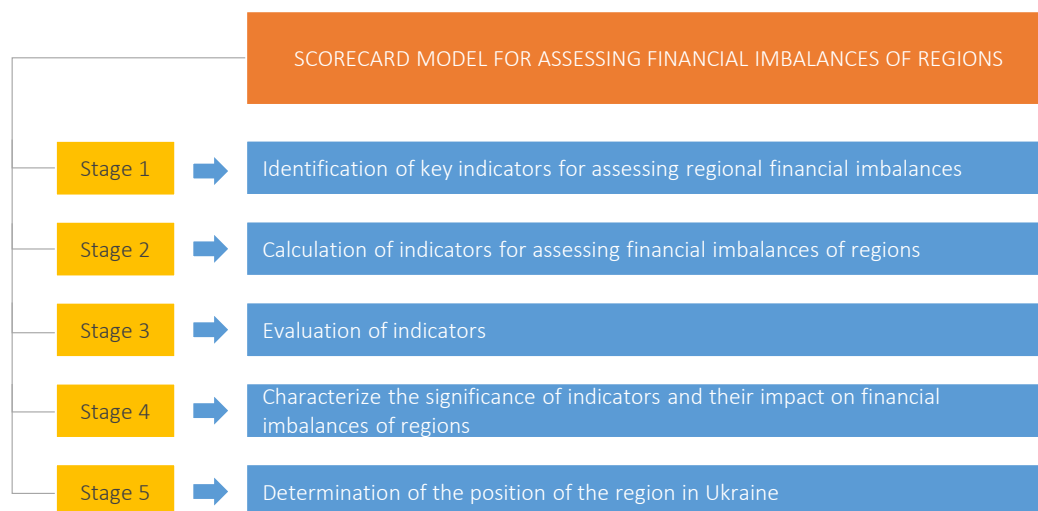
Clarke and Linzer (2015), discussing the problem of choosing between fixed and random ef-

fects in constructing panel regressions, argue that, despite the fact that the main argument against the use of random effects models is the potential correlation of explanatory variables with latent regional characteristics, this does not mean that the problem is not inherent to fixed-effect models.

Clarke, Crawford, Steele, and Vignoles (2010) argue that fixed-effect models are often used by default, at the same time, how the choice of model should be set for research purposes. Thus, the use of a certain type of model should be due to the specific goals of the researcher.

We propose an assessment of regional financial imbalances using a scorecard model that includes the following steps (Figure 2).

Source: Compiled by the author.



**Figure 2.** Scorecard model for assessing financial imbalances of regions

For a more detailed assessment of the financial imbalances of the regions of Ukraine, we will analyze not only the gross regional product, but also the gross regional product per capita, the index of the physical volume of the gross regional product at comparative prices (in the prices of the previous year), economically active population, incomes, capital investment.

## 2. RESULTS

### 2.1. Analysis of the gross regional product by region of Ukraine

The most universal indicator of the assessment of financial imbalances in the regions is the

gross regional product, which characterizes not only the level of development of the regional economy, but also the peculiarities of its sector structure, the efficiency of the functioning of individual sectors, branches and synthesizes the influence of a number of factors: the amount and availability of available resources, achieved in the region the level of technical development that determines the quality and productivity of the technological base of the economy, accumulated innovative potential, the quality of labor resources, production of ideas and innovation (Melnyk, 2012).

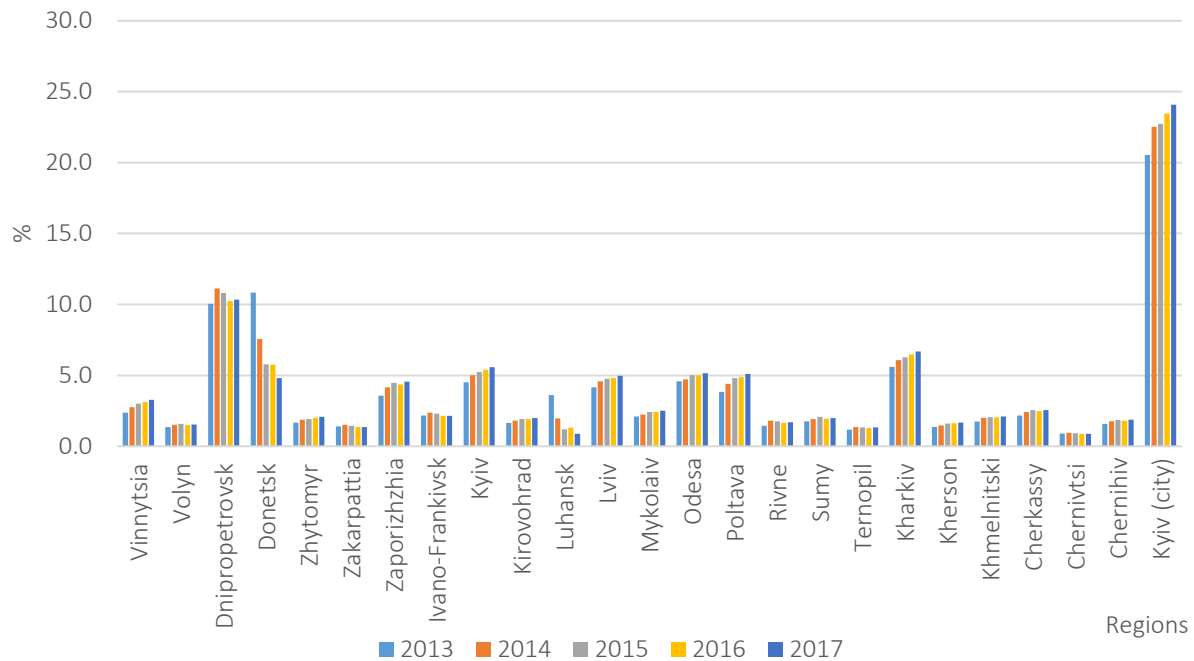
The dynamics of the gross regional product of Ukraine and regions for 2013–2017 is shown in Table 1.

**Table 1.** Dynamics of the gross regional product of Ukraine and regions for 2013–2017

Source: Державна служба статистики України [Derzhavna sluzhba statystyky Ukrainy] (n.d.).

Regions	2013		2014 <sup>1</sup>		2015 <sup>1</sup>		2016 <sup>1</sup>		2017 <sup>1</sup>		Deviation (+, -), 2017/2013, times		The pace of change, 2017/2013 times
	Amount, UAH million	Specific weight, %	Amount, UAH million	Specific weight, %	Amount, UAH million	Specific weight, %	Amount, UAH million	Specific weight, %	Amount, UAH million	Specific weight, %	Amount, million UAH	Specific weight, %	
Ukraine	1,522,657	100	158,6915	100	1,988,544	100	238,5367	100	266,9010	100	1,146,353	-3.0	1.8
Autonomous Republic of Crimea	46,393	3.0	...	...	...	...	...	...	...	...	-46,393	0.9	...
Vinnitsia	36,191	2.4	43,990	2.8	59,871	3.0	74,411	3.1	87,465	3.3	51,274	0.2	2.4
Volyn	20,622	1.4	24,195	1.5	31,688	1.6	35,744	1.5	41,030	1.5	20,408	0.3	2.0
Dnipropetrovsk	152,905	10.0	176,540	11.1	215,206	10.8	244,478	10.2	275,817	10.3	122,912	-6.0	1.8
Donetsk	164,926	10.8	119,983	7.6	115,012	5.8	137,500	5.8	128,775	4.8	-36,151	0.4	0.8
Zhytomyr	25,676	1.7	29,815	1.9	38,425	1.9	47,919	2.0	55,453	2.1	29,777	-0.1	2.2
Zakarpattia	21,400	1.4	24,120	1.5	28,952	1.5	32,390	1.4	36,170	1.4	14,770	1.0	1.7
Zaporizhzhia	54,352	3.6	65,968	4.2	89,061	4.5	104,323	4.4	121,624	4.6	67,272	0.0	2.2
Ivano-Frankivsk	33,196	2.2	37,643	2.4	45,854	2.3	51,404	2.2	57,688	2.2	24,492	1.1	1.7
Kyiv	68,931	4.5	79,561	5.0	104,030	5.2	128,638	5.4	148,997	5.6	80,066	0.3	2.2
Kirovohrad	25,313	1.7	28,758	1.8	38,447	1.9	46,021	1.9	53,202	2.0	27,889	-2.7	2.1
Luhansk	55,108	3.6	31,393	2.0	23,849	1.2	31,356	1.3	23,476	0.9	-31,632	0.8	0.4
Lviv	63,329	4.2	72,923	4.6	94,690	4.8	114,842	4.8	132,473	5.0	69,144	0.4	2.1
Mykolaiv	32,030	2.1	35,408	2.2	48,195	2.4	57,815	2.4	66,829	2.5	34,799	0.6	2.1
Odesa	69,760	4.6	74,934	4.7	99,761	5.0	119,800	5.0	137,295	5.1	67,535	1.3	2.0
Poltava	58,464	3.8	69,831	4.4	95,867	4.8	116,272	4.9	136,218	5.1	77,754	0.3	2.3
Rivne	22,004	1.4	28,724	1.8	35,252	1.8	39,469	1.7	45,361	1.7	23,357	0.2	2.1
Sumy	26,765	1.8	30,397	1.9	41,567	2.1	46,287	1.9	53,261	2.0	26,496	0.1	2.0
Ternopil	18,085	1.2	21,676	1.4	26,656	1.3	31,072	1.3	35,466	1.3	17,381	0.2	2.0
Kharkiv	85,315	5.6	96,596	6.1	124,843	6.3	154,871	6.5	178,563	6.7	93,248	1.1	2.1
Kherson	20,767	1.4	23,250	1.5	32,215	1.6	38,743	1.6	45,032	1.7	24,265	0.3	2.2
Khmelnyskyi	26,426	1.7	32,162	2.0	41,088	2.1	48,859	2.0	56,482	2.1	30,056	0.4	2.1
Cherkasy	33,087	2.2	38,466	2.4	50,843	2.6	59,412	2.5	68,547	2.6	35,460	-0.1	2.1
Chernivtsi	13,757	0.9	15,049	0.9	18,506	0.9	21,239	0.9	23,829	0.9	10,072	0	1.7
Chernihiv	24,237	1.6	28,156	1.8	36,966	1.9	43,362	1.8	49,981	1.9	25,744	3.5	2.1
Kyiv (city)	312,552	20.5	357,377	22.5	451,700	22.7	559,140	23.4	642,549	24.1	329,997	-0.7	2.1
Sevastopol	11,066	0.7	...	...	...	...	...	...	...	...	-11,066	-3.0	...

Note: <sup>1</sup> The data are given without taking into account the temporarily occupied territory of the Autonomous Republic of Crimea, the city of Sevastopol and part of the temporarily occupied territories in the Donetsk and Luhansk regions.



Note: Compiled based on Державна служба статистики України [Derzhavna sluzhba statystyky Ukrainy] (n.d.).

**Figure 3.** Dynamics of the share of regions in the gross regional product of Ukraine in 2013–2017

According to Table 1, the largest gross regional product for 2013–2017 was observed in Kyiv, Dnipropetrovsk and Donetsk regions. Thus, this indicator in Kyiv has a tendency to increase from UAH 312,552 million in 2013 to UAH 642,549 million in 2017, that is, by UAH 329,997 million or 2.1 times. In the Donetsk region in 2013–2017, there is also a tendency to increase by 122,912 million UAH or 1.8 times. At the same time, the gross regional product for 2013–2017 in the Donetsk region dropped from 164,926 million UAH in 2013 to UAH 128,775 million in 2017, i.e. by 36,151 or 0.8 times.

The smallest amount of the gross regional product for the analyzed period is observed in Chernivtsi (23,829 million USD in 2017), Ternopil (35,466 million USD in 2017), Rivne (45,361 million USD in 2017), Zakarpattia (36,170 million USD in 2017), Volyn (41,030 million UAH in 2017) regions.

In some regions, there is a tendency towards a decrease in the share of gross regional product in the total volume of the gross regional product of Ukraine (Table 1). For example, in Donetsk region in 2013, the share of the gross regional product was more than in 2017 and amounted to 10.8% of the gross regional product of Ukraine, and in 2017 – 4.8%.

Graphically, the dynamics of the share of regions in the gross regional product of Ukraine for 2013–2017 is shown in Figure 3. As can be seen from the data shown in Figure 3, significant changes in the share of the gross regional product of regions in the total volume of the gross regional product of Ukraine for 2013–2017 are observed in those areas where the contribution was most significant.

So, in Kyiv, we see an increase of this indicator from 20.5% in 2013 to 24.1% in 2017; in Dnipropetrovsk region – from 10.0% in 2013 to 10.3% in 2017; in Poltava – from 3.8% in 2013 to 5.1% in 2017; in Odesa – from 4.6% in 2013 to 5.1% in 2017.

## 2.2. Analysis of gross regional product per capita by regions of Ukraine

An important place in the assessment of financial imbalances in the development of regions of Ukraine is the gross regional product per capita, since this indicator reflects not only the process of production of goods and services, but also the population living in this territory (Table 2).



Analysis of the dynamics of gross regional product per capita by regions of Ukraine is given in Table 1, which shows that in spite of the political crisis in the country, in the period 2013–2017, its size in the majority of Ukraine's regions tended to increase.

According to Table 2, gross regional product per capita in Ukraine tended to increase by 1.9 times in 2017 compared to 2013. At the same time, we see the highest growth in such regions as: Vinnytsia (2.5 times in 2017 compared to 2013), Zhytomyr (2.2 times in 2017 compared to 2013), Zaporizhzhia (2.3 times in 2017 compared to 2013), Kirovohrad (2.2 times in 2017 compared to 2013), Poltava (2.4 times in 2017 compared to 2013), Khmelnytskyi (2.2 times in 2017 compared to 2013), as well as in Kyiv (2.0 times in 2017 compared to 2013) and other regions.

### 2.3. Estimation of the index of the gross volume of gross regional product in comparative prices (in prices of the previous year)

An important indicator in assessing financial imbalances in the regions is also the index of the physical volume of the gross regional product in comparative prices (in the prices of the previous year).

The dynamics of the index of the physical volume of the gross regional product in the comparative prices (in the prices of the previous year) for 2013–2017 is shown in Table 3.

According to Table 3, we observe that the index of physical gross regional product in the compara-

**Table 2.** Dynamics of the gross regional product in the calculation per capita for 2013–2017

Source: Державна служба статистики України [Derzhavna sluzhba statystyky Ukrainy] (n.d.).

Regions	2013	2014 <sup>1</sup>	2015 <sup>1</sup>	2016 <sup>1</sup>	2017 <sup>1</sup>	Deviations (+, –), 2017/2013, times	The pace of change, 2017/2013, times
Ukraine	33,473	36,904	46,413	55,899	63,578	30,105	1.9
Autonomous Republic of Crimea	23,595	...	...	...	...	–23,595	...
Vinnytsia	22,303	27,249	37,270	46,615	54,911	32,608	2.5
Volyn	19,817	23,218	30,387	34,310	39,375	19,558	2.0
Dnipropetrovsk	46,333	53,749	65,897	75,396	85,330	38,997	1.8
Donetsk	37,830	27,771	26,864	32,318	30,574	–7,256	0.8
Zhytomyr	20,286	23,678	30,698	38,520	44,692	24,406	2.2
Zakarpattia	17,044	19,170	22,989	25,727	28,714	11,670	1.7
Zaporizhzhia	30,526	37,251	50,609	59,729	69,826	39,300	2.3
Ivano-Frankivsk	24,022	27,232	33,170	37,220	41,773	17,751	1.7
Kyiv	39,988	46,058	60,109	74,216	85,890	45,902	2.1
Kirovohrad	25,533	29,223	39,356	47,469	55,063	29,530	2.2
Luhansk	24,514	14,079	10,778	14,251	10,842	–13,672	0.4
Lviv	24,937	28,731	37,338	45,319	52,294	27,357	2.1
Mykolaiv	27,355	30,357	41,501	50,091	58,026	30,671	2.1
Odesa	29,118	31,268	41,682	50,159	57,513	28,395	2.0
Poltava	39,962	48,040	66,390	81,145	95,335	55,373	2.4
Rivne	19,003	24,762	30,350	33,958	39,003	20,000	2.1
Sumy	23,517	26,943	37,170	41,741	48,231	24,714	2.1
Ternopil	16,819	20,228	24,963	29,247	33,449	16,630	2.0
Kharkiv	31,128	35,328	45,816	57,150	66,005	34,877	2.1
Kherson	19,311	21,725	30,246	36,585	42,619	23,308	2.2
Khmelnytskyi	20,165	24,662	31,660	37,881	43,896	23,731	2.2
Cherkasy	26,168	30,628	40,759	48,025	55,595	29,427	2.1
Chernivtsi	15,154	16,552	20,338	23,365	26,207	11,053	1.7
Chernihiv	22,603	26,530	35,196	41,726	48,330	25,727	2.1
Kyiv (city)	109,402	124,163	155,904	191,736	219,610	110,208	2.0
Sevastopol	28,765	...	...	...	...	–28,765	...

Note: <sup>1</sup> The data are given without taking into account the temporarily occupied territory of the Autonomous Republic of Crimea, the city of Sevastopol and part of the temporarily occupied territories in the Donetsk and Luhansk regions.

**Table 3.** Dynamics of the index of physical volume of gross regional product in comparative prices (in prices of the previous year) for 2013–2017

Source: Державна служба статистики України [Derzhavna sluzhba statystyky Ukrainy] (n.d.), State Treasury of Ukraine.

Regions	2013	2014 <sup>1</sup>	2015 <sup>1</sup>	2016 <sup>1</sup>	2017 <sup>1</sup>	Deviations (+, –), 2017/2013, times	The pace of change, 2017/2013, times
Ukraine	100.0	93.4	90.2	102.4	102.5	2.5	1.0
Autonomous Republic of Crimea	101.0	...	...	...	...	...	...
Vinnitsia	104.8	104.6	97.1	106.5	101.2	–3.6	1.0
Volyn	99.3	101.1	95.3	108.2	103.3	4	1.0
Dnipropetrovsk	99.3	95.1	90.3	98.4	103.1	3.8	1.0
Donetsk	94.7	67.1	61.3	99.1	92.5	–2.2	1.0
Zhytomyr	101.9	103.6	98.1	105.2	102.7	0.8	1.0
Zakarpattia	100.6	102.8	93.5	97.3	99.4	–1.2	1.0
Zaporizhzhia	99.3	100.4	94.7	99.7	104.7	5.4	1.1
Ivano-Frankivsk	97.7	97.6	92.0	99.0	106.3	8.6	1.1
Kyiv	93.4	99.4	94.0	105.7	105.2	11.8	1.1
Kirovohrad	109.5	100.6	91.7	105.0	95.2	–14.3	0.9
Luhansk	92.2	61.0	47.7	118.0	86.4	–5.8	0.9
Lviv	98.8	100.9	95.2	99.3	101.5	2.7	1.0
Mykolaiv	104.4	98.4	95.3	105.6	98.6	–5.8	0.9
Odesa	105.7	98.3	95.8	104.2	106.6	0.9	1.0
Poltava	94.4	96.0	93.8	97.9	95.8	1.4	1.0
Rivne	96.9	102.6	93.4	100.3	100.5	3.6	1.0
Sumy	102.7	100.4	96.7	96.6	103.7	1	1.0
Ternopil	96.6	108.0	93.7	98.5	103.6	7	1.1
Kharkiv	98.8	97.9	90.9	102.1	99.8	1	1.0
Kherson	101.1	99.7	98.7	102.8	100.5	–0.6	1.0
Khmelnyskyi	96.9	102.3	92.2	104.7	109.0	12.1	1.1
Cherkasy	100.7	98.9	95.0	101.8	98.0	–2.7	1.0
Chernivtsi	101.5	98.3	94.7	99.4	100.3	–1.2	1.0
Chernihiv	95.8	100.5	93.4	100.6	99.7	3.9	1.0
Kyiv (city)	106.4	96.1	93.3	105.5	107.4	1	1.0
Sevastopol	106.0	...	...	...	...	...	...

Note: <sup>1</sup> The data are given without taking into account the temporarily occupied territory of the Autonomous Republic of Crimea, the city of Sevastopol and part of the temporarily occupied territories in the Donetsk and Luhansk regions.

tive prices (in the prices of the previous year) for 2013–2017 in Ukraine tended to increase by 2.5 % or 1.0 times.

Along with this, we observe the growth of this indicator for the period under study in the following regions: Volyn (by 4% or 1.0 times), Dnipropetrovsk (by 3.8% or 1.0 times), Zhytomyr (by 0.8 % or 1.0 times), Zaporizhzhia (5.4% or 1.1 times), Ivano-Frankivsk (by 8.6% or 1.1 times), Kyiv (by 11.8% or by 1, 1 times), Lviv (by 2.7% or 1.0 times), Odesa (by 0.9% or 1.0 times), Poltava (by 1.4% or 1.0 times), Rivne (by 3.6% or 1.0 times), Sumy (by 1% or 1.0 times), Ternopil (by 7% or by 1.1 times), Kharkiv (by 1% or by 1.0 times), Khmelnytskyi (12.1% or 1.1 times), Chernihiv (3.9% or 1.0 times). At the

same time, there was a decrease in this indicator in the following regions: Vinnitsia, Donetsk, Zakarpattia, Kirovohrad, Luhansk, Mykolaiv, Kherson, Cherkasy, Chernivtsi.

#### 2.4. Analysis of economically active population by regions of Ukraine

Analyzing the indicators of financial imbalances in the development of regions, one can notice that the financial imbalances in the regional economy have a positive effect on the socioeconomic development of the regions, but the number of economically active population can make the opposite conclusion. The dynamics of the economically active population by region for 2013–2017 is given in Table 4.



**Table 4.** The dynamics of economically active population by region for 2013–2017

Source: Statistical collection "Regions of Ukraine" for 2017; Державна служба статистики України [Derzhavna sluzhba statystyky Ukrainy] (n.d.).

Regions	2013	2014 <sup>1</sup>	2015 <sup>1</sup>	2016 <sup>1</sup>	2017 <sup>1</sup>	Deviations (+, -), 2017/2013, times	The pace of change, 2017/2013, times
Ukraine	21,980,6	19,920,9	18,097,9	17,955,1	17,016,5	-4,964,1	0.77
Autonomous Republic of Crimea	966,2	....	....	....	....	-966,2	....
Vinnitsia	769,0	739,2	741,2	729,8	718,2	-50,8	0.93
Volyn	483,6	455,4	440,4	431,8	414,8	-68,8	0.86
Dnipropetrovsk	1,637,8	1,601,7	1,594,9	1,547,1	1,519,2	-118,6	0.93
Donetsk	2,133,7	1,968,8	877,7	871,3	383,5	-1,750,2	0.18
Zhytomyr	609,1	581,4	571,2	571,3	558,9	-50,2	0.92
Zakarpattia	586,8	574,5	571,8	561,8	554,0	-32,8	0.94
Zaporizhzhia	879,6	844,8	825,5	816,3	795,4	-84,2	0.90
Ivano-Frankivsk	606,5	595,9	609,5	610,4	612,9	6,4	1.01
Kyiv	807,8	786,9	790,6	789,8	784,8	-23	0.97
Kirovohrad	471,0	440,3	436,6	428,8	415,8	-55,2	0.88
Luhansk	1,078,0	990,3	362,7	355,5	76,0	-1,002	0.07
Lviv	1,189,0	1,135,4	1,134,7	1,134,9	1,118,6	-70,4	0.94
Mykolaiv	577,1	551,6	558,2	551,4	544,4	-32,7	0.94
Odesa	1,124,0	1,081,9	1,086,3	1,073,1	1,058,3	-65,7	0.94
Poltava	706,0	681,2	664,3	653,0	635,4	-70,6	0.90
Rivne	546,3	532,7	541,4	530,5	526,6	-19,7	0.96
Sumy	558,7	532,0	523,3	527,3	517,0	-41,7	0.93
Ternopil	489,1	469,1	460,3	460,4	450,9	-38,2	0.92
Kharkiv	1,370,6	1,328,8	1,324,2	1,321,2	1,305,9	-64,7	0.95
Kherson	524,6	499,8	496,6	496,9	488,3	-36,3	0.93
Khmelnitskyi	623,6	575,9	557,1	563,1	543,1	-80,5	0.87
Cherkasy	617,3	584,3	580,2	577,3	564,9	-52,4	0.92
Chernivtsi	423,0	407,4	404,9	411,8	399,9	89,6	1.21
Chernihiv	521,8	494,8	483,9	478,7	464,7	-57,1	0.89
Kyiv (city)	1,490,6	1,466,8	1,460,4	1,461,6	1,452,3	-38,3	0.97
Sevastopol	189,8	....	....	....	....	-189,8	....

Note: <sup>1</sup> The data are given without taking into account the temporarily occupied territory of the Autonomous Republic of Crimea, the city of Sevastopol and part of the temporarily occupied territories in the Donetsk and Luhansk regions.

According to Table 4, we observe a decrease in the economically active population in 2013–2017 in Ukraine by 4,964.1 thousand people, that is, from 21,980.6 thousand people in 2013 to 17,016.5 thousand people in 2017 or 0.77 times. Along with this, we see a reduction in all regions of Ukraine.

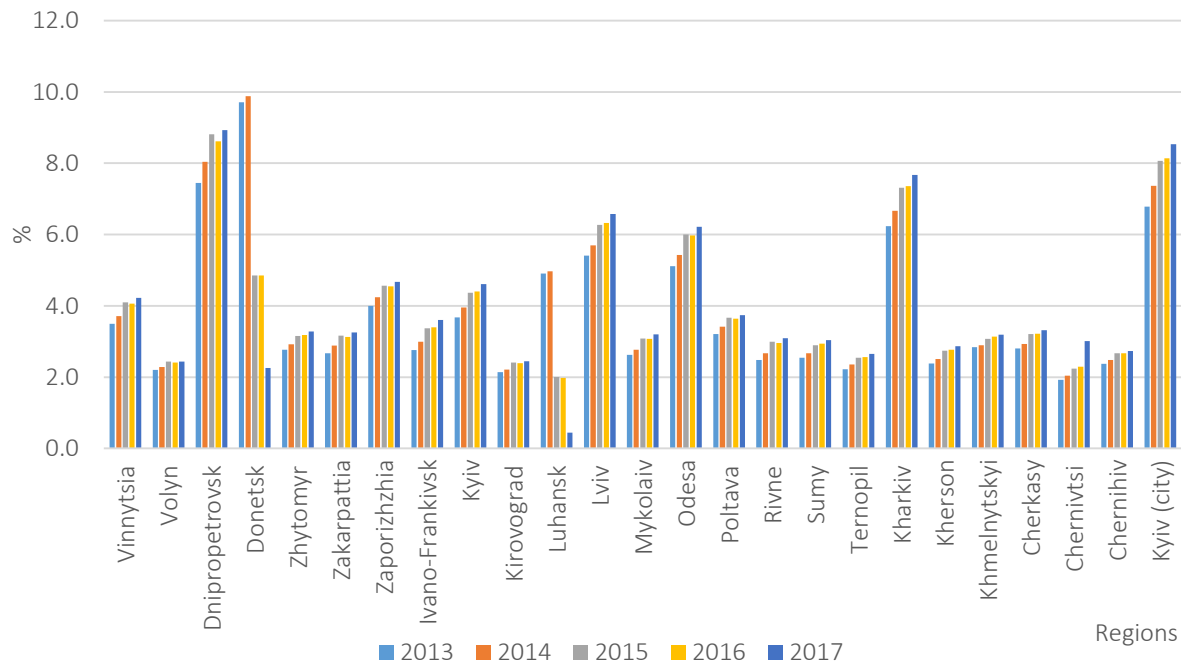
The largest decrease in the economically active population for 2013–2017 affected the following regions: Dnipropetrovsk (by 118.6 thousand people or 0.93 times), Donetsk (by 1,750.2 thousand people or 0.18 times), Luhansk (1,002 thousand people or 0.07 times), Zaporizhzhia (84.2 thousand peo-

ple or 0.90 times). The main trend in this situation is the development of financial innovation.

Graphically, the dynamics of changes in the share of the economically active population by regions for 2013–2017 is shown in Figure 4.

As for the incomes of the population by regions of Ukraine in 2013–2017, then from Table 6 it is clear that the imbalance in the profitability of economic districts and the development of financial imbalances in the regions of Ukraine are the important factors in the growth of incomes.

Source. Compiled based on Statistical collection "Regions of Ukraine" for 2017; Державна служба статистики України [Derzhavna sluzhba statystyky Ukrainy] (n.d.).



**Figure 4.** Dynamics of the change in the share of the economically active population by regions for 2013–2017

## 2.5. Estimation of living standards by regions of Ukraine

The main indicators of the standard of living of the population are household incomes, available income, disposable income per capita, real disposable income, in % to the corresponding period of the previous year, which leads to significant imbalances in the social subsystems of the regions. The dynamics of these indicators for 2013–2017 is given in Table 5.

According to Table 5, we observe that in the years 2013–2017, there has been an increase in these indicators in most regions of Ukraine.

At the same time, the main problem of financial imbalances in the regions of Ukraine is seen in the aggravation of corporate governance, the essence of which is that managers managing assets are trying to obtain a profit, in addition, because of the cost of corporations in the financial markets, they reduce their own funds, which leads to increased risk and uncertainty, which in turn leads to a reduction in investment in the real economy (Krippner, 2005).

## 2.6. Capital investment analysis by region

Investment activity is one of the key indicators of the economic development of the regions. The higher the investment activity of the business and the public sector, the better the prospects of economic growth, job creation, higher incomes, and increased demand for goods and services. Investment activity in the regions of Ukraine is very unbalanced and especially emphasizes the gap in the potential of regions to attract investors – national or international.

It should be noted that all regions have more or less the same need for capital investments, as the degree of wear and tear of fixed assets in Ukraine is catastrophically high and is constantly increasing.

The dynamics of capital investments by region for 2010–2017 is shown in Table 6.

Analysis of the data given in Table 6 allows us to conclude that the distribution of capital investments in the regional system is asymmetric. Thus, it should be noted the growth of capi-

Table 5. Revenues by regions of Ukraine for 2013–2017

Source: Державна служба статистики України [Derzhavna sluzhba statystyky Ukrainy] (n.d.).

Regions	Revenues, mln. UAH					Available income, mln. UAH					Available income per capita, UAH					Real disposable income, in % to the corresponding period of the previous year				
	2013	2014 <sup>1</sup>	2015 <sup>1</sup>	2016 <sup>1</sup>	2017 <sup>1</sup>	2013	2014 <sup>1</sup>	2015 <sup>1</sup>	2016 <sup>1</sup>	2017 <sup>1</sup>	2013	2014 <sup>1</sup>	2015 <sup>1</sup>	2016 <sup>1</sup>	2017 <sup>1</sup>	2013	2014 <sup>1</sup>	2015 <sup>1</sup>	2016 <sup>1</sup>	2017 <sup>1</sup>
Ukraine	1,548,733	1,516,768	1,772,016	2,051,331	2,579,147	1,215,457	1,151,656	136,2599	1,582,293	1,944,250	26,719.4	26,782.1	31,803.1	37,079.9	45,762.7	106.1	88.5	79.6	102.0	107.4
Autonomous Republic of Crimea	57,324	...	...	...	...	44,816	...	...	...	...	22,793.2	...	...	...	...	111.6	...	...	...	...
Vinnitsia	46,157	49,418	60,923	71,888	91,131	37,323	37,812	47,609	55,761	69,221	23,000.6	23,421.7	29,637.1	34,931.4	43,725.0	106.6	91.2	86.1	105.9	110.5
Volyn	26,907	27,986	34,064	40,792	52,560	20,609	20,985	26,049	31,267	39,580	19,804.9	20,137.2	24,979.9	30,012.5	38,068.7	106.4	90.8	82.5	106.0	110.9
Dnipropetrovsk	124,594	136,810	166,076	188,816	237,631	99,995	105,223	127,830	143,861	175,159	30,300.6	32,036.2	39,142.0	44,365.9	54,215.4	105.3	94.0	81.1	99.2	106.7
Donetsk	166,366	142,745	117,471	117,735	143,745	135,362	113,343	91,388	89,036	105,336	31,048.5	26,234.4	21,346.4	20,927.0	24,947.5	104.3	75.4	55.2	83.7	102.3
Zhytomyr	34,947	36,814	45,053	53,684	68,891	27,405	27,831	34,799	41,026	51,644	21,652.1	22,102.1	27,801.4	32,979.1	41,786.6	102.4	91.0	82.7	104.5	110.6
Zakarpattia	29,102	29,988	37,182	44,137	55,810	22,512	21,840	28,282	33,812	41,885	17,929.3	17,358.1	22,456.7	26,856.2	33,281.7	105.5	86.9	85.8	105.2	109.3
Zaporizhzhia	62,671	68,327	81,737	96,695	118,821	50,545	53,449	63,841	75,910	91,286	28,388.1	30,181.8	36,277.4	43,461.6	52,726.9	104.9	94.1	80.4	104.6	104.8
Ivano-Frankivsk	37,310	37,848	47,152	56,418	71,229	29,003	28,139	36,689	43,807	54,218	20,987.8	20,356.7	26,540.1	31,718.9	39,325.5	105.0	86.7	86.7	105.9	109.0
Kyiv	58,894	63,342	76,150	90,505	116,572	47,216	49,133	58,767	69,552	87,779	27,390.6	28,443.3	33,955.6	40,126.9	50,320.5	104.2	92.3	79.5	104.7	110.7
Kirovohrad	27,695	28,901	35,350	41,875	53,040	21,485	21,605	26,750	31,746	39,283	21,671.4	21,954.1	27,382.5	32,744.7	40,877.2	106.0	89.8	84.4	104.7	107.6
Luhansk	71,485	56,233	44,157	41,267	50,541	57,527	44,124	34,594	30,348	35,927	25,590.3	19,788.3	15,633.6	13,792.7	16,468.2	105.4	67.6	54.5	78.1	103.8
Lviv	75,762	79,378	97,740	116,285	148,728	58,762	59,887	74,919	89,517	111,891	23,138.3	23,595.2	29,542.2	35,325.0	44,194.2	106.1	90.2	82.0	104.7	111.2
Mykolaiv	35,125	36,373	44,275	52,390	66,388	27,948	27,362	34,075	40,363	50,241	23,868.8	23,458.5	29,342.1	34,970.5	43,851.8	104.1	87.4	83.6	104.5	108.1
Odesa	78,285	80,438	101,179	118,472	149,222	61,265	58,096	77,509	93,463	115,600	25,571.8	24,242.0	32,384.5	39,132.1	48,473.7	115.4	83.8	88.0	104.9	107.0
Poltava	46,984	49,928	60,610	71,926	90,750	37,118	38,078	46,203	54,362	66,861	25,371.2	26,195.7	31,996.5	37,938.4	47,075.3	106.1	92.2	81.3	102.1	106.9
Rivne	31,811	33,314	40,309	47,356	60,116	24,507	25,266	31,021	36,374	45,169	21,165.0	21,781.0	26,707.7	31,294.8	38,881.8	108.1	91.5	80.9	102.9	108.4
Sumy	33,469	35,375	44,311	52,551	65,663	26,812	27,007	34,189	40,014	48,729	23,558.6	23,938.1	30,572.3	36,084.4	44,323.3	104.8	90.3	84.2	101.5	105.9
Ternopil	26,345	26,892	33,851	40,277	51,116	20,424	19,718	25,670	29,954	37,176	18,993.8	18,400.5	24,040.1	28,194.7	35,211.2	103.1	86.5	85.8	103.1	108.9
Kharkiv	91,333	95,897	116,880	135,675	168,964	71,530	71,841	87,736	103,509	126,220	26,098.2	26,274.0	32,197.9	38,196.6	46,789.7	106.1	89.8	81.5	102.9	105.6
Kherson	29,489	30,077	38,233	44,268	54,429	23,362	22,183	29,695	34,913	42,307	21,724.0	20,727.9	27,880.0	32,967.9	40,242.6	108.9	85.2	89.2	102.9	103.7
Khmelnytskyi	36,770	38,853	48,653	57,367	71,908	29,865	29,585	38,015	44,362	54,199	22,789.0	22,686.1	29,291.9	34,394.5	42,349.6	105.7	88.6	86.5	103.5	107.7
Cherkasy	35,024	36,694	44,708	53,496	68,035	27,353	27,329	33,642	39,992	49,754	21,633.2	21,760.5	26,969.7	32,327.2	40,589.0	104.4	89.3	82.3	104.7	108.2
Chernivtsi	22,408	22,941	28,316	33,657	42,751	17,646	16,798	21,773	25,780	32,125	19,438.2	18,475.6	23,929.0	28,360.8	35,403.4	108.7	85.7	87.2	105.2	110.9
Chernihiv	30,393	31,998	38,780	45,716	57,752	25,306	24,509	29,871	34,534	42,424	23,599.7	23,093.4	28,440.4	33,231.3	41,320.7	104.0	85.9	79.8	101.4	107.3
Kyiv (city)	218,747	240,198	288,856	338,083	423,354	159,534	180,513	221,683	269,030	330,236	55,841.6	62,715.1	76,513.7	92,253.6	112,704.7	105.8	100.2	85.3	106.2	105.5
Sevastopol	13,336	...	...	...	...	10,227	...	...	...	...	26,584.4	...	...	...	...	116.2	...	...	...	...

Note: <sup>1</sup> The data are given without taking into account the temporarily occupied territory of the Autonomous Republic of Crimea, the city of Sevastopol and part of the temporarily occupied territories in the Donetsk and Luhansk regions.

**Table 6.** Dynamics of capital investments by regions for 2010–2017

Source: Державна служба статистики України [Derzhavna sluzhba statystyky Ukrainy] (n.d.).

Regions	2013	2014 <sup>1</sup>	2015 <sup>1</sup>	2016 <sup>1</sup>	2017 <sup>1</sup>	Deviations (+, -), 2017/2013, times	The pace of change, 2017/2013, times
Ukraine	249,873.4	219,419.9	273,116.4	359,216.1	448,461.5	198,588.1	1.8
Vinnitsia	6,109.5	5,674.6	7,373.0	8,301.9	11,744.1	5,634.6	1.9
Volyn	3,327.1	3,389.7	6,166.8	6,384.2	7,041.9	3,714.8	2.1
Dnipropetrovsk	21,290.1	20,356.5	25,919.9	33,169.0	42,908.5	21,618.4	2.0
Donetsk	27,912.4	13,155.32	8,304.3	11,902.2	17,268.9	-10,643.5	0.6
Zhytomyr	3,005.4	2,904.9	4,044.4	5,573.5	7,722.0	4,716.6	2.6
Zakarpattia	2,645.8	2,638.7	3,778.4	4,663.0	5,623.7	2,977.9	2.1
Zaporizhzhia	6,838.8	7,034.5	7,794.3	11,039.7	15,879.7	9,040.9	2.3
Ivano-Frankivsk	4,797.2	6,837.5	9,609.3	7,947.6	9,707.8	4,910.6	2.0
Kyiv	20,696.6	19,653.5	24,359.1	33,411.4	34,494.5	13,797.9	1.7
Kirovohrad	3,224.0	3,122.4	4,057.1	6,355.3	7,320.9	4,096.9	2.3
Luhansk	11,369.3	5,222.62	2,060.1	4,122.2	3,329.8	-8,039.5	0.3
Lviv	9,816.7	9,555.0	13,386.5	18,605.2	24,105.9	14,289.2	2.5
Mykolaiv	5,008.7	3,771.4	5,989.9	9,730.2	11,178.0	6,169.3	2.2
Odesa	11,872.2	9,361.3	9,983.5	16,728.7	22,299.7	10,427.5	1.9
Poltava	9,536.3	8,827.8	8,337.9	15,265.1	15,855.6	6,319.3	1.7
Rivne	2,837.3	2,804.6	4,334.2	4,324.1	6,126.8	3,289.5	2.2
Sumy	2,721.3	2,798.1	3,663.0	5,762.6	6,947.1	4,225.8	2.6
Ternopil	2,976.2	2,590.0	3,827.5	4,888.2	7,150.6	4,174.4	2.4
Kharkiv	9,292.6	8,032.3	11,246.7	16,545.9	19,361.7	10,069.1	2.1
Kherson	2,124.8	2,208.1	3,107.4	4,591.3	7,362.2	5,237.4	3.5
Khmelnyskyi	3,637.6	4,078.3	6,809.3	9,123.3	10,499.9	6,862.3	2.9
Cherkasy	3,413.3	3,262.1	4,485.8	6,498.7	8,144.2	4,730.9	2.4
Chernivtsi	2,257.4	1,686.9	2,789.2	2,668.8	2,992.1	734.7	1.3
Chernihiv	2,842.0	2,621.2	3,550.2	5,318.5	7,351.1	4,509.1	2.6
Kyiv (city)	70,320.6	67,832.6	88,138.6	106,295.5	136,044.8	65,724.2	1.9

Note: <sup>1</sup> Data are given without taking into account the temporarily occupied territory of the Autonomous Republic of Crimea, the city of Sevastopol, and from 2014–2017, without part of the temporarily occupied territories in the Donetsk and Luhansk regions.

tal investment in the following regions: Vinnitsa – UAH 5,634.6 million, Volyn – UAH 3,714.8 million, Dnipropetrovsk – UAH 21,618.4 million, Zhytomyr – UAH 4,716.6 million, Zakarpattia – UAH 2,977.9 million, Zaporizhzhia – UAH 9,040.9 million, Ivano-Frankivsk – UAH 4,910.6 million, Kyiv (city) – UAH 13,797.9 million, Kirovograd (city) – UAH 4,096 thousand, Lviv – UAH 14,289.2 million, Mykolaiv – UAH 6,169.3 million, Odesa – UAH 10,427.5 million, Poltava – UAH 6,319.3 million, Rivne – UAH 3,289.5 million, Sumy – UAH 4,225.8 million, Ternopil – UAH 4,174.4 million, Kharkiv – UAH 10,069.1 million, Kherson – UAH 5,237.4 million, Khmelnytskyi – UAH 6,862.3 million, Cherkasy – UAH 4,730.9 million, Chernivtsi – UAH 734.7 million, Chernihiv – UAH 4,509.1 million, Kyiv – UAH 65,724.2 million. Thus, there are significant disparities in the dynamics of the distribution of capital investments, which concentrate mainly in regions with high levels of development.

## CONCLUSION

The separate regional indicators were influenced by the construction of infrastructure objects for Euro 2012 (Lviv, Donetsk region, Kyiv). At the same time, according to the calculations of investment support of the regions of Ukraine capital investments, there is a difference of 1.5 times. The given statistics allow asserting that a number of regions have the lowest comparative rating of volumes of capital investments in enterprises of the region.

In general, Ukraine's regions with very high needs for investment resources, due to the deterioration of fixed assets, have very different levels of availability of investment and scientific potential, which is necessary to bring the economy to a new level of quality, to radically increase the added value of products and services, and productivity. Peripheral regions of the central, northern and western parts of Ukraine suffer from a lack of investment and are in a certain closed circle when the lack of internal resources pushes potential investors away, and without additional financial investments, achieving a qualitatively new level of development is impossible. It is obvious that DRP should offer radical new approaches to stimulating the disclosure of these regions' potential through the use of unorthodox tools based on the unique features and capabilities of these regions (SURDP, n.d.).

Consequently, we have carried out an assessment of the financial imbalances of the regions based on the scorecard model, which allows us to characterize certain key indicators that are important for the development of each region of Ukraine.

The analyzed indicators make it possible to determine the need for radical transformations in the development and formation of financial imbalances in the development of regions of Ukraine to strengthen the trends of stagnation processes in regional development, to deepen the differentiation of regions, to assess the degree of interregional differentiation, to identify imbalances in the development of territories, to identify sources of structural imbalances and on this the basis of timely adjustments to the parameters of fiscal policy, which includes the tax policy (management processes of transformation tax legislation and tax administration, collection and redistribution of taxes between the budgets areas) and fiscal policy (expenditure budget management, grants, budgetary investments).

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