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EVALUATION OF THE EFFECT OF SECTOR CAPITAL ASSETS USE EFFICIENCY ON CAPITAL PRODUCTIVITY RATIO IN UKRAINE

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The real state of the capital assets' disposal through the national economy sectors is determined in comparison with the result of capital assets use in the country's economic complex in general in the time period of 1990-2012. It has been proved that the apparent total results regarding efficiency achieved in capital assets use through the sectors of economy do not demonstrate their real effect on the capital productivity ratio of the national economy in the whole. Analysis of the effect of the labor instruments concentrated in the national economy sectors on the national capital productivity ratio has been made. The sectors with their stuff which really determine the level of capital assets use in the country have been identified. Existence and development of the institute of economic initiatives have been proved. The fact is that the economic initiatives mentioned above concentrate their efforts on the improvement of capital assets use and the need to attract attention of the subjects of economic activities to the social development concept.

***Keywords:** capital assets, use, capital productivity ratio, sectors of economy, effect, evaluation, destruction.*

Introduction. It is a well known fact that the instruments of production availability at any enterprise provide production process of goods (works, services). Workability of instruments of production is carried out only through their productive use. The totality of production instruments applied at the country's enterprises is getting economic form of capital assets. Their totality is associated with the enterprise assets which takes part in production process repeatedly and transfers its value to the manufactured produce in parts. Regarding the process of the country's economy transformation to the market model and steady development model one of the primary issues of social dynamics is to improve efficiency of capital assets use. Nevertheless, according to the research of the spin-off-effects the subjects of national economic activities in producing their income have become independent from the

degree of their production factors' use.

These problems can be solved only by creating the new kind of management which would be able to form and transform generalized information regarding the state and degree of capital assets use into effective managerial decisions. It is obvious, that just analytical aspects of the efficient use of resources have attracted the native scientists' attention.

Analysis of recent research and publications. The basis of efficient use of capital assets analysis has been formed for many years. Such well known foreign scientists as M. Van-Bred, K. I. Weidman, J. Mellis, K. Mattern, E. Hendrickson and others were at the begging of the issue research. At the times of the USSR such soviet scientists as P. Bunich, V. Vorotilov, M. Herasimchuk, P. Ivanov, Y. Kvasha, I. Lukinov, S. Pokropivniy, L. Timoshenko, O. Khramov and others made great contribution to the theory of capital funds and analysis of their use. The attempts to provide the instruments of production scientific diagnostics have not been stopped since Ukraine's joining the system of independent economic activities. They were directed to merely scientific and methodical development and proximate evaluation of capital assets use both in economy in general and in its sectors in particular. In this context we can single out the works by Y. Kapitanets (scientific principles of capital assets use efficiency) [1], O. Kundeus (diagnostic methods of capital assets use efficiency) [2], T. Zub (analysis and modeling of capital productivity ratio) [3], T. Marenich (methods of evaluation and improvement the indices of efficient capital assets use) [4], V. Poluyanova (dynamics of capital productivity ratio in economy of Ukraine) [5], Z. Tenyukh (the factor analysis of capital productivity ratio in public sector of economy) [6], A. Smaglyuk (the capital use efficiency) [7].

Previously unsettled problem constituent. Nevertheless, in spite of existence of theoretic and methodical developments regarding transformational changes as for transition to more efficient capital assets use, national practice could not profit from them in full. It was caused by focusing on the particular issues of the capital assets potential attraction without taking into account interaction and mutual effect of the sector constituents of economic system; application of the foreign scientific recommendations which were not always suitable in the context of axiomatic resources use efficiency increase by the private owner. At the same time, we should remark that till now there is no conception of the need to apply classic scientific principles of calculation and usage of absolute and relative statistic values in analytical processes which cause superficial and ungrounded conclusions. In this connection the issues of theoretic and methodological maintenance improvement arise regarding reorganization aimed at providing scientific base for conversing efforts to more efficient use of capital assets towards the social development drive.

Main purpose of the article. The aim of the article is to identify the index changes of the national capital productivity ratio under the influence of the sector

dynamics of the capital assets use efficiency and to single out destructive policy aspects to attract the country's technical potential to supply resources to social and economic dynamics.

Results and discussions. The most informative index among generalizing indices is the capital productivity ratio of the capital assets, which shows the result when each UAH has been spent on formation and support of the capital funds' workability. The amount of produce received in the course of capital funds' efficient use under certain economic conditions is expected to produce the above mentioned result. As for the fund's productivity calculation it does not make any difficulties. In this case production volume is divided by average annual full balance cost of capital funds. But there are certain methodological obstacles concerning counting up the volume of production. However, there is manufacturing connection between the labor forces and technical means of production. Just a worker puts in motion means of production and in production environment performs his/her productive functions. It is the singled out connection that forms methodical platform to determine capital productivity. Figure 1. demonstrates changes of the capital funds cost, the produced therewith GDP volume and the capital productivity ratio.

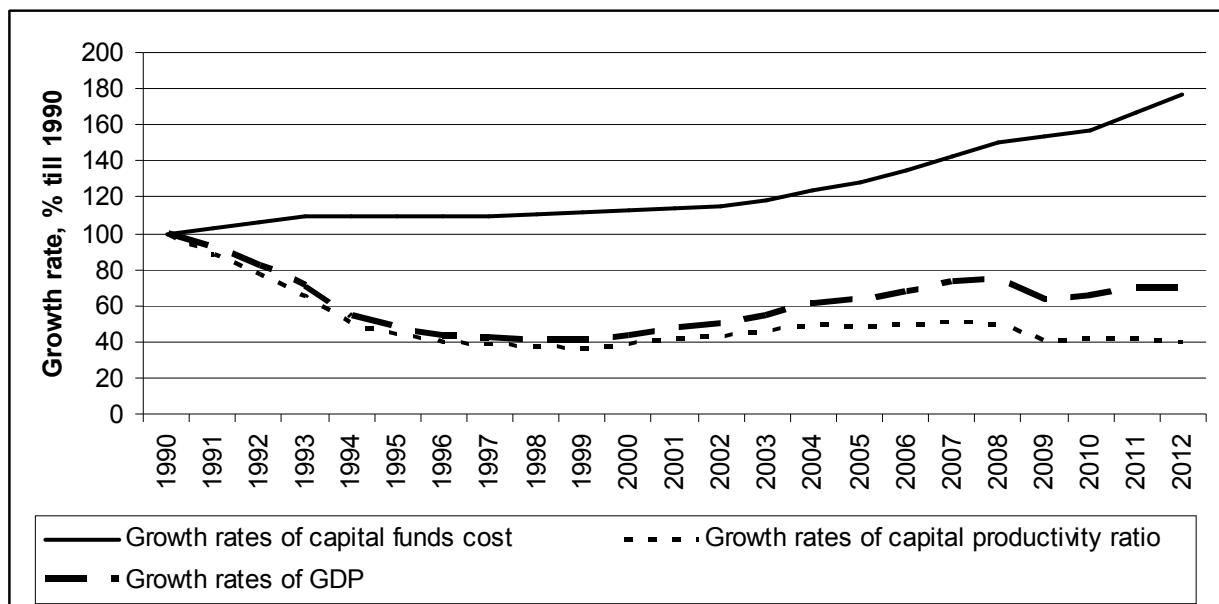


Fig. 1. Growth rates of GDP, capital funds cost and capital productivity ratio in the period of 1990-2012 in Ukraine

The figure is made and calculated by the author according to the data given in [8]

According to the data of fig.1 absolute volume of the capital productivity ratio in 2012 did not exceed 39,3% of its level in 1990. To comprehend acceptability of the current level of capital productivity ratio of capital assets in Ukraine the fact should

be stressed that this index had not exceeded 80,0% of the same index in the USA by the end of 1990 [9, p.66].

The way of forming the capital productivity ratio generalized index can be debated, but in any case just sector system must be talked about. Though, each sector of economy functions in line with its autonomous regularities and it determines its own result of consuming resources.

Our calculations of the results of the capital assets use by the national economy sectors are generalized in fig. 2. Analysis of the capital productivity ratio indices changes in the first, the second and the third sectors of economy gives grounds to state that there was a strong tendency for their reduction, which emerged and was developing during the period of 1990-2012. In economy the capital productivity ratio in general reduced from 0,392 in 1990 to 0,154 in 2012 or by 2,5 times. At that, the capital productivity ratio in construction sector reduced respectively from 1,256 to 0,503 or by 2,5 times, and in the services providing sector it reduced respectively from 0,266 to 0,120 by 2,2 times. At the same time, there was opposite dynamics at the enterprises of the agricultural sector where the capital productivity ratio increased from 0,582 to 0,809 or by 1,4 times.

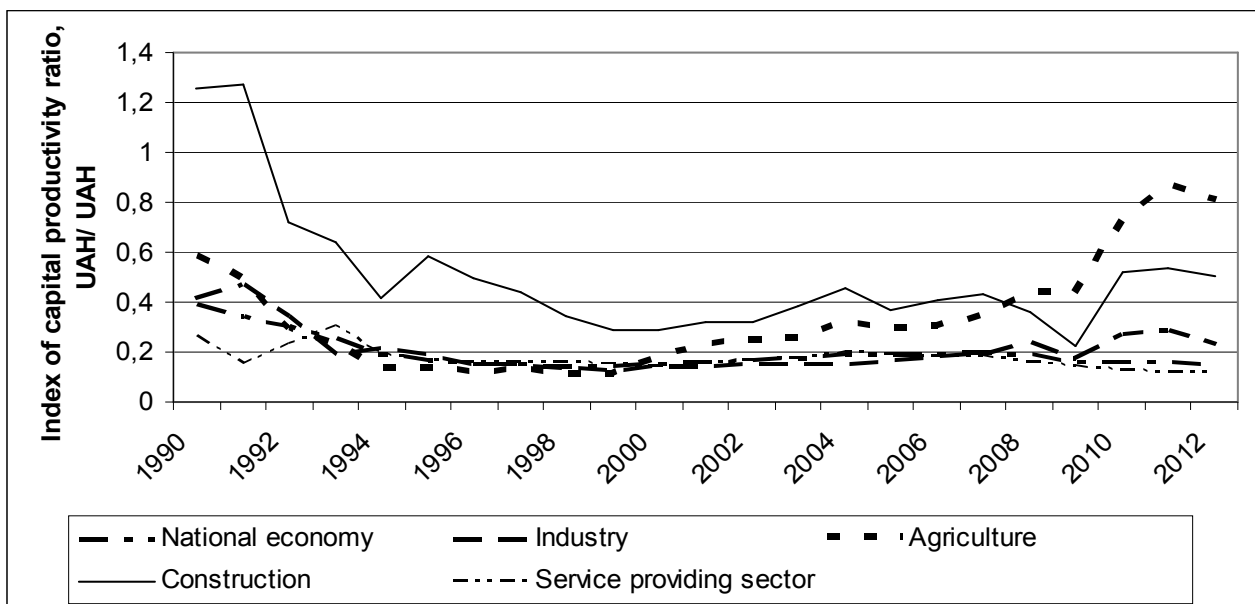


Fig. 2. Growth rates of the capital productivity ratio in the sectors of national economy of Ukraine in the time period of 1990-2012

The figure is made and calculated by the author according to the data given in [8]

Summing up the abovementioned information, it is reasonable to distinguish another section of changes and sector indices of the capital productivity ratio. Such situation has arisen from the comparison of sector indices of the capital productivity ratio with the corresponding ones in economy in general. The absolute value of

capital productivity ratio in agriculture by the end of 2012 has exceeded the total national level by 5,3 times, it has exceeded this index in construction by 3,3 times and in industry by 1,5 times. If we get back to the source and namely to the year 1990, we will see that the singled out proportions were less divergent and namely in industry they did not exceed 1,1 times, in construction – 1,1 times and in agriculture – 3,2 times.

In spite of the cited statistical data of the absolute values' correlations regarding sector indices of the capital productivity ratio with the corresponding ones in the first, in the second sectors of economy, movement to structural wholeness at forming the average index of capital assets use efficiency is subjected to another regularities.

The systemic index of capital productivity ratio which constituents are known beforehand presumes existence of the hidden mechanism of generalizing under the principle «sector-effect». From the point of view of analysis methodology, connection between simple components and the constituent itself is shown by weighted average arithmetic quantity. Such indication as specific gravity of the sector subject's capital assets in their total cost of national economy was chosen by us as «weight». Summing up the results of our calculations we can confidently conclude that there is a minor pressure of construction and agricultural branches on the investigated macro index formation.

In the time period from 1990 till 2012 the effect strength of the sector indices of capital productivity ratio on the formation of the corresponding index of economy in general, of course, did not have statistic character. Thus, contribution of agriculture to the national level of capital assets efficient use was varying within the limits from 24,5% in 1990 to 6,7% in 2007 and to 7,9% in 2012. As for construction industry, the effect of capital productivity ratio formation did not exceed the limits of 2,4÷8,8%. At that, in the time period from 1990 till 2012 the effect strength on the capital assets efficient use gained the tendency to reduction both in construction and agriculture.

To our mind, really intensified source basis for formation of the national level of the capital assets efficient use is industrial sector and the sector for providing services. It is interesting that these sectors' influence changes on the national economy capital productivity ratio had heterogeneous character. While effect of the sector for providing services on the national economy capital productivity ratio was increasing, the industrial pressure was weakening. Empiric reality in these sectors of economy is developing in such a way: in 1990 more than 34,4% of the national economy level index was formed by the processes of capital assets use in industry and 33,2% of it was formed in the sector for providing services; in 2012 the effect of industry reduced by 7,7 and the effect of sector for providing services increased by 1,9 times.

There is a question on the adequacy of changes of the sector influence of industry and the sector for providing services of the formed source construction of the

capital assets efficient use in condition of socially focused economy.

Industry is the leading branch of production complex of the country. Moreover, its development influences the development of the other branches of industry of economy. Social focusing of industry and other branches dependent on industry is evident through the technical means of production which are connected with the development of modern equipment and technical supply of innovative technologies industries, construction and introduction of new labor facilities and development of intellectual abilities of the people.

We can not also deny the importance of the services providing sector of economy as it meets the needs of the average citizens. Though according to the experts «the material basis of this branch constitutes only 48-50 percent of the normative level» [10, p.197]. Taking into account the facts mentioned above the state of the capital assets use in the industrial sector of economy needs more attention in the variety of its complex elements. Generalized calculations in this respect are given in table 1.

Analysis of the absolute levels of output-capital investment ratio in industrial complexes of Ukraine and their contribution evaluation to the formation of generalized index of capital assets efficient use in industry causes logic rethinking of transformations in it and destructive actions and measures identification.

According to the usual scheme of scientific canons all actions of the subjects of economic activities in socialized economy are determined by the needs of socialization economic basis formation, but the tendencies shown in table 1 give evidence of inadequacy of implementation the table principles. We are talking about a very complicated process, which are getting progressive character. But the most important fact is that it is still beyond attention of the most scientific research works. To our mind, it seems to be a paradox that there is reformatting the source basis of capital assets use improvement from the processing industries to production, transmission and use of electric energy, gas and heating facilities. The tendency mentioned above can not be evaluated under the logic of social and market reformation and the innovative model of social development being implemented. According to our calculations in 1990 more than 73,8% of the absolute level of the output-capital investment ratio in industry were formed by processing industries and in 2012 79,9% of this index were provided by energetic complex activities.

In the scientific and practical context the research results distinguish the phenomenon of real bases devaluation for rational economic platforms which is very threatening for implementation of stable development paradigm. Thus, we should focus on the large-scale modernization of processing industry. With the expansion of privatization process concerning energy supplying enterprises to the population in particular, new owners or leaseholders practically on the perpetual bases use both the philosophy of rationality and philosophy of irrationality from the point of view of

their own priorities in capitalization policy.

Table 1. Dynamics of the capital assets use efficiency in the industry branches' complexes in the time period of 2001-2012

Indicators	Years												
	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
I. The cost of fixed assets, current prices, mln. UAH.													
Industry	267080	311089	339259	362598	420080	456738	525222	660369	760194	970942	1101199	1116367	1603646
Including:													
mining		60130	62543	66974	74878	80012	87562	96006	109677	127723	141164	204255	231128
manufacturing		174158	181394	191953	224367	245800	295046	366247	438872	614731	705712	644566	677880
II. Average value of fixed assets by industry industrial complexes, %.													
Industry		100,0	100,0	100,0	100,0	100,0	100,0	100,0	100,0	100,0	100,0	100,0	100,0
Including:													
mining		19,3	18,4	18,5	17,8	17,5	16,7	14,5	14,4	13,2	12,8	18,3	14,4
manufacturing		56,0	53,5	52,9	53,4	53,8	56,2	55,5	57,7	63,3	64,1	57,7	42,3
Production of electricity, gas and water.		24,7	28,1	28,6	28,8	28,7	27,1	30,0	27,9	23,5	23,1	24,0	43,3
III. The cost of fixed assets, constant prices of 2012, bln. UAH.													
Industry		1741,6	1813,9	1919,5	2243,7	2458,0	2950,5	3662,5	4388,7	6147,3	7057,1	6445,7	6778,8
Including:													
mining		336,6	334,4	354,5	399,9	430,6	491,9	532,5	633,2	808,7	904,7	1179,3	977,0
manufacturing		975,0	969,9	1016,2	1198,4	1322,8	1657,4	2031,2	2533,7	3892,0	4522,6	3721,6	2865,5
Production of electricity, gas and water.		430,0	509,6	548,8	645,4	704,6	801,2	1098,8	1221,8	1446,6	1629,8	1544,8	2936,3
IV. Gross value added at current prices, mln. UAH.													
Industry		55337	61827	72826	89065	119971	150090	198368	247872	214358	242577	286375	306536
Including:													
mining		8513	10016	10854	12518	17939	22064	31695	54337	40676	64074	85694	82528
manufacturing		35592	40386	49702	64124	86863	109416	143428	164735	141878	146749	158738	178442
Production of electricity, gas and water.		11232	11425	12270	12423	15169	18610	23245	28800	31804	31754	41943	45566
V. The share of the production of gross value added industrial complexes, %.													
Industry		100,0	100,0	100,0	100,0	100,0	100,0	100,0	100,0	100,0	100,0	100,0	100,0
Including:													
mining		15,4	16,2	14,9	14,1	15,0	14,7	16,0	21,9	19,0	26,4	29,9	26,9
manufacturing		64,3	65,3	68,2	72,0	72,4	72,9	72,3	66,5	66,2	60,5	55,4	58,2
Production of electricity, gas and water.		20,3	18,5	16,9	13,9	12,6	12,4	11,7	11,6	14,8	13,1	14,7	14,9
VI. Gross value added at constant prices of 2012, bln. UAH.													
Industry	275,8	293,6	311,2	335,1	353,4	393,9	433,7	460,5	453,5	345,1	363,3	375,1	374,8
Including:													
mining		45,2	50,4	49,9	49,7	58,9	63,8	73,6	99,4	65,5	96,0	112,2	100,9
manufacturing		188,8	203,3	228,7	254,4	285,2	316,2	333,0	301,4	228,4	219,8	207,9	218,2
Production of electricity, gas and water.		59,6	57,8	56,6	49,1	49,6	53,8	53,9	52,6	51,1	47,6	55,1	55,8
VII. The capital productivity ratio in industrial complexes, UAH / UAH.													
Industry	0,147	0,147	0,149	0,155	0,150	0,166	0,186	0,193	0,242	0,174	0,269	0,289	0,234
Including:													
mining		0,134	0,151	0,141	0,124	0,137	0,130	0,138	0,157	0,081	0,106	0,095	0,103
manufacturing		0,194	0,210	0,225	0,212	0,216	0,191	0,164	0,119	0,059	0,049	0,056	0,076
Production of electricity, gas and water.		0,061	0,113	0,103	0,076	0,070	0,067	0,049	0,043	0,035	0,029	0,036	0,019
VIII. The contribution of industrial complexes in the formation of the capital productivity ratio industry, UAH / UAH.													
Industry	0,147	0,147	0,149	0,155	0,150	0,166	0,186	0,193	0,242	0,174	0,269	0,289	0,234
Including:													
mining		0,026	0,028	0,026	0,022	0,024	0,022	0,020	0,023	0,011	0,014	0,017	0,015
manufacturing		0,108	0,112	0,119	0,113	0,116	0,107	0,091	0,069	0,037	0,031	0,032	0,032
Production of electricity, gas and water.		0,013	0,009	0,010	0,015	0,026	0,057	0,082	0,150	0,126	0,224	0,240	0,187
IX. The contribution of industrial complexes in the formation of the capital productivity ratio industry, %.													
Industry		100,0	100,0	100,0	100,0	100,0	100,0	100,0	100,0	100,0	100,0	100,0	100,0
Including:													
mining		17,6	18,6	16,8	14,7	14,4	11,6	10,4	9,3	6,1	5,0	6,0	6,4
manufacturing		73,8	75,3	76,8	75,6	69,9	57,6	47,1	28,4	21,3	11,6	11,2	13,8
Production of electricity, gas and water.		8,8	6,0	6,5	10,0	15,7	30,6	42,5	62,0	72,4	83,3	83,0	79,9

The table is made and calculated by the author according to the data given in [8]

Institutional limits (regulations) in force they see as complementary factors but not compulsory ones. Profit-hunting should stimulate technical means production,

speeding up renovation of capital assets. But in practice the institute of economic initiatives has been developed in the national space which has excluded the classic notion of development.

Conclusions and further researches directions. In scientific and practical context the investigation results have distinguished the phenomenon which is rather menacing for the paradigm of stable development implementation. This phenomenon causes devaluation of rational economic activities bases. In conclusion we suggest focusing on the large –scale modernization of processing industries. Besides, expansion of the range of industrial objects privatization and the enterprises providing energy to population in particular cause the situation when the new owners or leaseholders use the property on the perpetual basis. They adhere to the philosophy of both rationality and irrationality from the point of view of their priorities in capitalization policy. The institutional limits at that are comprehended by them as optional but not compulsory ones. Profit-hunting should have stimulated technical means production development, speeding up fixed capital renovation. But in practice, in the national space the institute of economic initiatives has been developed which unfortunately excludes classic notion of development.

We do not have reason to state that implementation of analytic and management activities applying constant monitoring the sector effect of capital assets use efficiency on capital productivity ratio in the national economy will give immediate results and with lightning speed will eliminate all economic troubles and will produce dynamically directed economic development of economy. We can speak of this method as the instrument opening new opportunities for applying new organizational and balanced decision-making methods. But we state that the suggested method can be very helpful for creating stable socially focused national economy based on capital assets efficient use in industry. As for the paradigm of monitoring and effect evaluation of output-capital investment ratio in national economy sectors it should undergo further approbation and its separate principles in particular. Potential prospects of combination merely analytical abilities and management system improvement have the right to be implemented after some practical approbation.

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ОЦІНКА ВПЛИВУ СЕКТОРНОЇ ЕФЕКТИВНОСТІ ВИКОРИСТАННЯ ОСНОВНИХ ЗАСОБІВ НА ФОНДОВІДДАЧУ В УКРАЇНІ

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У статті встановлено реальний стан з використанням основних засобів по секторам національної економіки у порівнянні з результатом задіяння основного капіталу по господарському комплексу країни загалом в період 1990-2012 рр. Доведено, що очевидні абсолютні результати щодо досягнень в ефективності використання основних фондів по секторам економіки не відтворюють їх реального впливу на показник фондівіддачі по національній економіці загалом. Здійснено аналіз впливу секторних результатів використання, сконцентрованих у них засобів праці, на загальнонаціональний показник фондівіддачі і виявлено сектори і комплекси їх наповнюючі, які реально визначають рівень використання основних фондів в країні. Доведено, що в національному просторі розгорнувся інститут господарських ініціатив, які виключили відповідність ніш прикладення зусиль по покращенню використання основного капіталу суб'єктами господарювання концепції суспільного розвитку.

Ключові слова: *основні засоби, використання, фондівіддача, сектори економіки, вплив, оцінка, деструкції.*

**ОЦЕНКА ВЛИЯНИЯ СЕКТОРНОЙ ЭФФЕКТИВНОСТИ ИСПОЛЬЗОВАНИЯ
ОСНОВНЫХ СРЕДСТВ НА ФОНДООТДАЧУ В УКРАИНЕ**

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В статье установлено реальное экономическое состояние по использованию основных средств по секторам национальной экономики в сравнении с результатом использования основного капитала по хозяйственному комплексу страны в целом в период 1990-2012 гг. Обосновано, что обозримые абсолютные результаты относительно достижений в эффективности использования основных фондов по секторам экономики не представляют их реального влияния на показатель фондоотдачи по национальной экономике в целом. Осуществлен анализ влияния секторных результатов использования, сконцентрированных в них средств труда, на общенациональный показатель фондоотдачи и выявлены секторы и комплексы их наполняющие, которые реально определяют уровень использования основных фондов в стране. Обосновано, что в национальном пространстве функционирует институт хозяйственных инициатив, который изолирует соответствие секторов приложения усилий в контексте улучшения показателей использования основного капитала субъектами хозяйствования концепции общественного развития.

Ключевые слова: *основные средства, использование, фондоотдача, секторы экономики, влияние, оценка, деструкции.*