

Analysis of Articles of Fixed Assets Renewal of Russian Business Enterprises

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Abstract — In the present article, the topicality of the chosen research theme is given proof. The need of the analysis of articles of fixed assets renewal of Russian business enterprises conditions not only a high level of competitive ability and effectiveness of activity, but also makes it possible to decrease process cost. Further, within the scope of the research, some problem aspects of articles of fixed assets renewal of the business enterprises resisting renewal of capital assets, are considered. On the ground of official data of Federal State Statistics Service, such indicators of capital movement as retirement and renewal rates (as percentage of capital fund availability at the end of the year), startup of capital assets (cost and structure), the degree of depreciation (overall figures of all economic activities), a fraction of fully depreciated capital assets (by individual industries and types of basic funds) and depreciation charge amount (cost and as percentage of basic assets availability) are analyzed (as exemplified by Russian business enterprises, including types of economic activities). For an analyzed period, the radius from 2014 to 2016 is chosen. Then according to the results of the analysis, some principal factors manipulating effectiveness of fixed assets renewal are singled out, the need of well-timed and full business capital renewal is confirmed and some recommendations of its optimization are given.

Keywords — *fixed assets, reproduction, capital movement showing, capital assets, business capital.*

I. INTRODUCTION

Fixed assets have one of the priority senses in the forming of effective activity of any enterprise, as long as they either directly take part in the production manufacturing process/rendering services or create necessary conditions for the work flows. There are many classifications of fixed assets, but, generally, they consist of buildings, constructions, machine and equipment, apparatuses and devices, transport vehicles, toolware and inventory, productive livestock and pedigree cattle, perennial planting and so on [5].

The availability and qualitative structure of fixed assets at an enterprise condition not only its economic independence, competitive strength and financial sustainability, but also are

an important factor in the development of all economy in whole, since they directly influence the progress of marketed relations [9].

Today the problem of company provision by basic production assets and optimality of their use is very urgent because plenty of current reequipment mechanisms and reproduction of capital are not high-performance. In this connection, it is necessary to carry out an analysis for the current state of fixed assets renovation process in accordance with the following data:

TABLE I. COEFFICIENT OF RENEWAL AND RETIREMENT RATE OF FIXED ASSETS IN RUSSIAN FEDERATION BY LINE OF BUSINESS (IN COMPARABLE PRICES):

Index number:	2014	2015	2016
Coefficient of renewal (new fixed assets, as percentage of fixed assets availability at the end of year), %			
All fixed assets	4.6	4.3	3.9
According to lines of business:			
rural economy and forestry	4.3	4.0	3.9
fishery and fish breeding	3.2	3.9	2.8
mining operations	6.8	5.8	6.6
manufacturing activity	6.9	6.9	6.3
production and distribution of electricity, gas and water	5.7	5.1	4.0
building	4.3	3.8	3.4
distributive industries (wholesale and retail trade)	6.5	7.5	6.2
hotels and restaurants	3.3	3.5	2.8
transport and communication	4.2	4.0	3.2
financing activity	10.6	7.9	7.1
real estate operations	2.6	2.6	2.5
public administration and security	6.2	5.0	5.7
education	4.2	3.3	2.8
public health and social services	5.8	3.8	2.9
rendering of other services	4.7	2.9	3.4
Retirement rate (fixed assets liquidation, as percentage of fixed assets availability at the beginning of year), %			
All fixed assets	0.7	0.8	1.0
According to lines of business:			
Index number:	2014	2015	2016

rural economy and forestry	2.1	1.8	2.1
fishery and fish breeding	0.9	3.0	0.9
mining operations	0.8	0.8	1.1
hotels and restaurants	0.6	0.5	0.7
transport and communication	0.3	0.4	0.4
financing activity	1.1	1.2	1.6
real estate operations	0.5	1.1	1.4
public administration and security	0.8	1.0	1.0
education	0.7	0.6	0.8
public health and social services	1.7	1.1	1.1
rendering of other services	0.7	0.4	0.6

For the greater obviousness of the comparative movement of basic indicators, it is rational to show the data introduced in Table 1 by means of the diagram of the coefficient of renewal and retirement rate of basic assets movement:

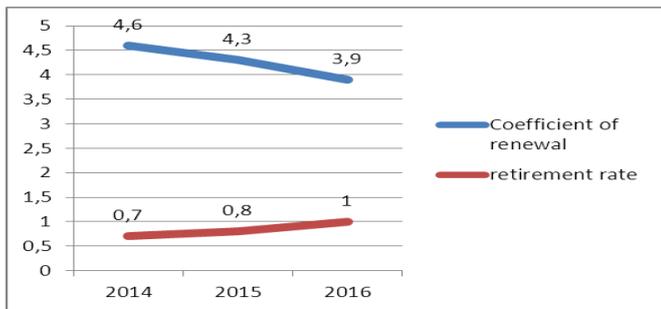


Fig. 1. Comparative movement of asset transaction coefficients in the period from 2014 to 2016

Basing on the data shown in Figure 1 and Table 1, it can be concluded that the dynamics of changing of fixed assets movement coefficients has a considerable gap (the limit of the value of the coefficient of renewal is from «3,9» to «4,6», and that of the retirement rate is from «0,7» to «1»). This fact can mean that Russian enterprises follow extended reproduction tactics (proliferation of means of labour). This can be conditioned by the availability of free production space and maximum machine utilization. The given way of capital renewal is actual at a high level of demand and buying power, which is impossible to say about the Russian market. Also the given situation can give evidence of Russian enterprises innovative activity decrease due to labour means qualitative development slowdown [10].

The dynamics of each coefficient can be described in the following way:

Starting from 2014 up to the present, the growth of the coefficient of renewal is taking place that may refer to business capital decreasing, and this, in turn, predetermines reduction of final products quantity of output and its degradation. This substantially impairs the ability of the analyzed enterprises to compete. In respect of retirement rate, very slight growth from 2014 up to the present is observed [2]. This could point to the working life reduction of the elements of fixed assets that would benefit the development of marketed relations of the Russian enterprises, if the value of the retirement rate weren't so negligible.

For the more detailed study, it is necessary to consider the reasons for the revealed dynamics structurally according to each coefficient of fixed assets movement. To begin with, one should study the following analytical table:

TABLE II. NEW FIXED ASSETS IN RUSSIAN FEDERATION BY LINES OF BUSINESS (MILLION RUBLES)

	2014	2015	2016
All fixed assets	10 887 946	10 721 081	11 295 086
According to lines of business:			
rural economy and forestry	424 567	449 408	525 233
fishery and fish breeding	15 696	12 553	14 158
mining operations	1 563 104	1 921 590	2 249 077
manufacturing activity	1 666 748	1 646 172	1 642 336
production and distribution of electricity, gas and water	1 012 798	876 551	807 503
building	210 770	165 588	176 193
trade industry	492 517	452 988	515 901
hotels and restaurants	55 514	66 922	73 070
transport and communication	2 319 934	1 909 505	1 948 535
financing activity	388 071	345 222	406 750
real estate operations	1 608 346	1 517 081	1 563 299
public administration and security	469 601	662 190	716 752
education	236 667	240 599	210 398
public health	199 655	158 381	155 457
other services	223 958	296 331	290 424

With reference to the data given in Table 2, one can conclude that throughout the period under review, the increase of cost value of set in operation capital assets is locked in. That may mean that with the decrease of the amount of introduced capital elements (coefficient of renewal reducing), the cost for them increases and if the effectiveness of their implementation falls short of expectations, it can threaten to worsen intensity of fixed assets renewal. For better obviousness of structural changes study, it is necessary to construct the following diagram:

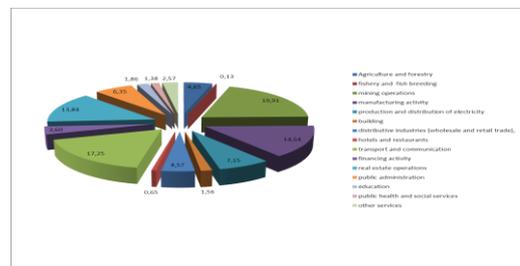


Fig. 2. The structure of new fixed assets in RF according to the data of 2016

Following the data shown in Figure 2 and Table 2, it is evident that some branches make the greatest specific weight in the input of fixed assets structure:

- mining operations 19.91% (2 249 077 mln. RUB.);

- transport and communication 17.25% (1 948 535 mln. RUB.);
- manufacturing activity 14.54% (1 642 336 mln. RUB.);
- real estate operations 13.84% (1 563 299 mln. RUB.)

The least specific weight is accounted for by:

- fishery and fish breeding 0.13% (14 158 mln. RUB.);
- hotels and restaurants 0.65% (73 070 mln. RUB.)

In general, this structure is fully justified by branches capital coefficient and strategic tasks of RF economy. Further, it is necessary to study the data relating to the retirement rate; for that, the following table is needed:

TABLE III. DEGREE OF DEPRECIATION OF FIXED ASSETS IN RUSSIAN FEDERATION

Index number	2014	2015	2016
Degree of depreciation of fixed assets, %	49.4	47.7	48.7

In accordance with the data introduced in Table 3, it can be concluded that in the period from 2014 to 2015 the decrease by 1,7% is recorded, and from 2015 to 2016 there is the increase by 1%, but, since the changes are not considerable, then one cannot definitely assess the situation. However during the whole analyzed period the degree of depreciation almost achieves critical value of 50% (the standard value of this coefficient is not regulated by law, but only fixed in corporate accounting policy), that is indicative of a high degree of deterioration of fixed assets elements and the necessity of their rapid replacement.

Subsequently, for the completeness of the research, it is necessary to seriously study the structure of the fixed assets depreciation according to some types of activities, to achieve this it is needed to analyze the following data:

TABLE IV. THE PORTION OF FULLY DEPRECIATED FIXED ASSETS IN RUSSIAN FEDERATION IN COMMERCIAL ORGANIZATIONS BY INDIVIDUAL INDUSTRIES AND TYPES OF FIXED ASSETS, %

Index number	specific weight of fully depreciated fixed assets, %		
	2014	2015	2016
All fixed assets	14.6	14.9	15.8
Out of them:			
utility	3.5	3.4	3.4
works	14.2	14.4	15.0
machinery and equipment	22.1	23.1	24.5
transport vehicles	10.3	10.7	11.9
Fixed assets of organizations:			
Agriculture and forestry	7.0	7.2	7.5
Out of them:			
utility	2.9	2.5	2.2
works	7.8	7.1	5.6
machinery and equipment	10.3	11.4	12.8
transport vehicles	12.3	12.4	13.9
mining operations	22.9	21.6	19.9
Out of them:			
utility	7.0	6.8	7.3
works	22.1	20.4	17.4

machinery and equipment	32.0	31.5	33.0
transport vehicles	21.8	20.9	23.0
manufacturing activity	13.3	14.0	15.0
Out of them:			
utility	2.0	2.0	2.0
works	9.6	13.1	13.6
machinery and equipment	18.8	18.9	20.5
transport vehicles	16.2	18.5	19.4
Building	13.5	13.5	13.8
Out of it:			
utility	5.4	2.9	2.6
works	7.4	9.7	7.3
machinery and equipment	19.5	20.1	22.1
transport vehicles	14.8	15.7	17.6
distributive industries	18.8	20.3	23.1
Out of them:			
utility	9.1	9.1	8.5
works	15.4	17.1	20.4
machinery and equipment	43.2	43.7	45.4
transport vehicles	4.9	4.9	6.3
Transport and communication	10.8	11.8	12.9
Out of them:			
utility	4.6	4.9	5.2
works	7.9	8.2	8.6
machinery and equipment	21.1	24	25.8
transport vehicles	8.6	9.2	10.6

For the further analysis, it is necessary to methodize the data shown in Table 4 in the form of the following diagrams:

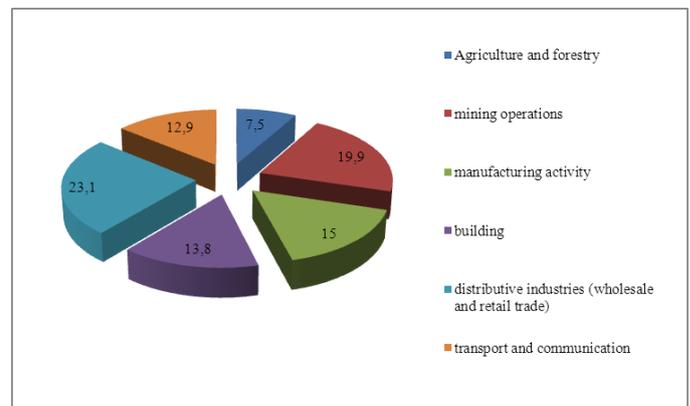


Fig. 3. The structure of fully depreciated fixed assets in 2016

Basing on the data presented in Table 4 and Figure 3, the inference should be drawn that the maximum specific weight in the structure of fully depreciated fixed assets is accounted for by:

- wholesale and retail trade: 23.1%;
- mining operations: 19.9%;

The dynamics of structural index number changing within the discussed period is trivial:

- wholesale and retail trade has the growth from 2014 to 2015 by 1.5% and from 2015 to 2016 by 2.8%, this affected the changing of specific weight priority in the general structure: the replacement of the top ranking branch from mining operations to trading environment;

- mining operations are reduced by 1.3% from 2014 to 2015 and by 1.7% from 2015 to 2016.

To figure out the reason of such a situation, it is essential to consider at the cost of what elements of fixed assets the changes have occurred:

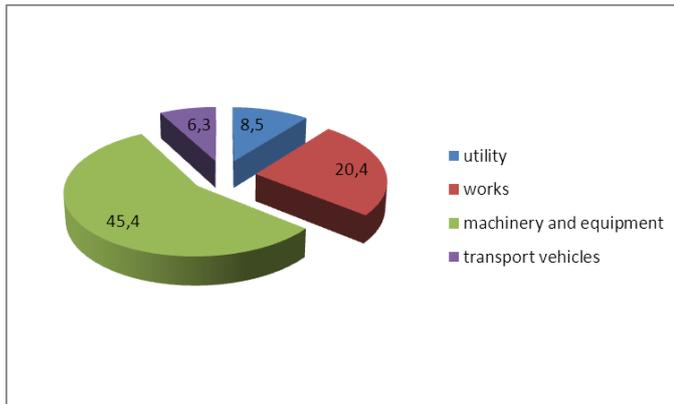


Fig. 4. The structure of the elements of wholesale and retail trade fixed assets in 2016

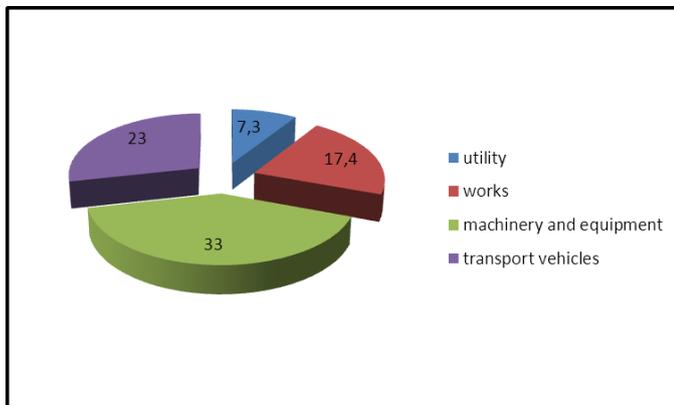


Fig. 5. The structure of the elements of permanent assets of mining operations in 2016

With reference to the data shown in Figures 4 and 5, a conclusion can be made that the maximum specific weight in the structure of fully depreciated fixed assets is accounted for by machinery and equipment: 45.4% in wholesale and retail trade and 33% in mining operations, as well as works: 20.4% and 17.4% branch-wise accordingly [18]. The given situation can be conditioned by peculiarity and capital intensity of these branches, but high values of the given index numbers can be indicative of the need of timely fixed assets renewal.

Next, there is a need to analyze one of the main sources of funds for reproduction of capital of an enterprise and the instrument of depreciation remuneration, such as depreciation charges:

TABLE V. FIXED ASSETS AMORTISATION CALCULATED FOR A REFERENCE YEAR IN PROFIT ORGANIZATIONS (WITHOUT SMALL BUSINESSES) BY LINES OF BUSINESS

Index number	2014	2015	2016
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million rubles			
All fixed assets	4 179 492	4 751 927	5 297 692
by line of business including:			
agriculture, hunting and forestry	133 513	150 175	164 597
fishery and fish breeding	4 735	5 337	5 483
mining operations	871 075	969 720	1 181 380
manufacturing activities	726 923	932 008	1 039 223
production and distribution of electricity, gas and water	446 763	509 874	528 935
building	86 794	98 824	99 585
wholesale and retail trade; repair of vehicles, motorcycles, household goods, personal hygiene items	593 109	594 701	705 194
hotels and restaurants	13 081	15 654	24 330
transport and communication	762 519	816 679	857 342
financing activity	241 734	255 597	273 108
real estate activities, lease and provision of services	251 526	347 050	364 622
public administration and defence; compulsory social maintenance	502	515	1 095
education	183	139	178
public health and rendering of social services	9 660	9 673	13 808
provision of other municipal, social and personal services	37 375	45 981	38 812
as percentage of fixed assets availability at the beginning of the reporting year by full book value			
All fixed assets	6.6	6.7	6.5
by line of business including:			
agriculture, hunting and forestry	8.5	8.4	8.5
fishery and fish breeding	7.3	7.4	8.0
mining operations	9.1	8.6	9.1
manufacturing activities	8.1	8.4	8.2
production and distribution of electricity, gas and water	5.8	5.8	5.6
building	10.5	10.2	9.4
wholesale and retail trade; repair of vehicles, motorcycles, household goods, personal hygiene items	4.1	4.2	4.1
hotels and restaurants	6.4	6.7	7.9
transport and communication	5.6	5.5	5.1
financing activity	12.6	12.1	11.5
real estate activities, lease and provision of services	7.4	6.7	5.9
public administration and defence; compulsory social maintenance	6.8	4.8	6.3
education	5.0	4.2	3.4
public health and rendering of social services	7.5	6.2	7.8
provision of other municipal, social and personal services	10.4	11.7	8.7

Basing on the data given in Table 5 (part 1 – in million rubles), it is reasonable to construct a graph reflecting the structure of calculated amortization by lines of business:

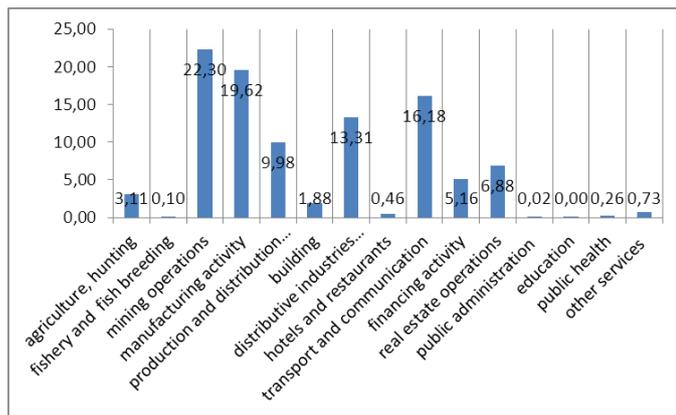


Fig.8. The structure of calculated amortization in 2016

On the basis of Figure 8, one can conclude that the most specific weight in the structure of calculated amortization is accounted for by the following branches:

- mining operations: 22.3%;
- manufacturing activities: 19.62%;
- transport and communication: 16.18%;
- wholesale and retail trade: 13.31%;
- production and distribution of electricity, gas and water: 9.98%;

Further relying on the data of Table 5 (part 2 - as percentage of fixed assets availability at the beginning of the reporting year by full book value), one can visually represent the dynamics of values changing by lines of business having the maximum specific weight:

Thus, following Figure 9 and Table 5, it can be seen that the amount of amortization charges increases, which creates an opportunity of reprocessing and renewal of depreciated articles of fixed assets. The need of the priority branch way of articles of fixed assets renewal, set in motion by specifications and capital requirements of production, is confirmed.

However taking into account qualitative value of the given index number level (% to fixed assets availability), it is apparent that the renewal process is at a very low level that does not ensure high efficiency of the held activities.

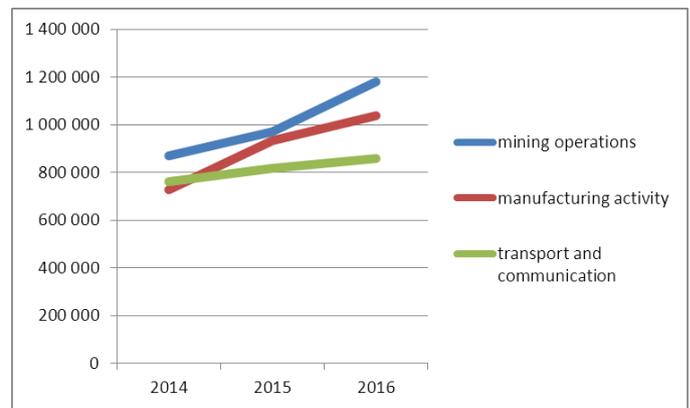


Fig. 9. The dynamics of calculated amortization changing by lines of business

II. CONCLUSION

In accordance with the carried out analyses two main groups of problem aspects preventing from the renewal of articles of fixed assets can be made:

- 1) Internal ones: the lack of vast amounts of finances and the reluctance of leaders to divert vast amounts of finances, deficiency of technical innovation, production area and etc.;
- 2) Exogenous ones: high market prices, tax liability, stiff competition and etc.

Provided that, the necessity of the renewal of fixed assets, which is specified by matter of course – wear and tear, cannot be underestimated [17]. These factors imply their consensence and loss in value, decline in output (production cut and diseconomy for repair costs and service work) and marketed competitive power of output (services). The high level of depreciation also creates a threat for operation safety and production operation accident risk [8].

As the main factors facilitating efficiency of upgrading of fixed assets renewal, the following can be singled out:

TABLE VI – EFFICIENCY FACTORS OF ARTICLES OF FIXED ASSETS RENEWAL OF A BUSINESS ENTERPRISE

Groups of factors	
Efficiency upgrading	Hampering
Depreciation policy	Safety: - accident rate; - repair and etc.
High yield of investment	Ecological factors
Low charges	Export surety
Optimal structure of fixed assets	Branch specification
Capital renewal	Tax liability

III. RECOMMENDATIONS

For the renewal optimization procedure of articles of fixed assets, it is necessary to update depreciation policy (popularization of accelerated depreciation and enhancing of depreciation rates) and attract investments into fixed capital assets (for this, one must create congenial investment climate - export

processing zones, a high level of capital investment safety, innovative activity rising and etc.).

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