DEPRECIATION AND INPUT OF FIXED ASSETS ON THE RAILWAYS

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ABSTRACT

Despite the increased financing volume of railway transport investment, the level of deterioration of its rolling stock and infrastructure hardly reduces. One of the reasons hindering the development of railways in Russia is the lack of depreciated assets even for simple reproduction, and therefore an adequate flow of investment is required to solve the problem of replacing the old fixed assets with the new fixed assets. To justify the additional financial resources it is necessary in this case to provide an accurate reassessment of both original and the current market price of fixed assets, which are on the balance sheet. But above all, it is required to find methodological approaches, appropriate to the tasks, to achieve reliable monitoring of threshold quantities, as well as balance of reproduction and renewal of fixed assets, increase in productive possibilities capacity of the sector in general.

ENGLISH SUMMARY

Background.

Economic growth of any industry depends on the amount of invested assets. Usually it involves capital investment with a purpose of its subsequent increase.

The capital increase occurs due to the growth of the economic potential of an economic entity, as well as increase in its productivity and product quality. Return on capital increases due to more efficient use of productive resources as a result of new equipment, more advanced technology and innovations. Investments are a major source of systems' improvement, key to their stable functioning.

Investment in the creation of new material and technical base and reconstruction and modernization of existing one- is the main way of development of any enterprise. Investments influence the size of the reproduction and expansion of fixed assets.

Objective.

The objective of the authors is to investigate some essential problems, associated with depreciation of fixed assets on railway transport.

Methods.

The authors use analytical approach and mathematical method to fulfill their aim.

Results.

Russia annually exaggerates the volume of investments in fixed assets. Although the lack of investment still remains, there is visible positive dynamics of investment flow, which grows from year to year numerically and in real terms.

Table 1 shows the yearly volume of investments in fixed assets of Russian companies.

In recent years, the growth of investments in the country amounted to 14%, which is higher than the inflation rate, which was 6.5% in 2013.

The notion of investment is inextricably linked to the notion of economic growth on both the micro- and macro-level, as investment activity involves the subsequent capital increase. Economic growth means increase in the level of real production output, which is associated with development of productive forces within a certain time. Growth factors are the processes and phenomena that determine the extent of the increase in production, the possibility of increasing its real effectiveness and improving the basic qualitative characteristics. Such factors include the production resources, number and quality of personnel, the volume and structure of capital, technological advancement and organization of production process and management system. To increase production output and ensure growth of economic potential it is necessary to increase either capital or labor resources, or both simultaneously. Moreover, the possibilities of labor resources are more limited, and the main source of growth is usually capital, the increase in which is directly proportional to the increase in the amount of investments.

To better define the role of investment in the economy two notions should be considered «gross investments» and «net investments». Gross investments are the total volume of funds invested in a certain period, allocated for the maintenance and increase in fixed capital. Gross investments (GI) are the sum of net investments (NI) and amortization charges (AC).

Net investments are investments in excess of depreciated savings with purposes of increase, buildup of fixed assets by construction of buildings and structures, manufacture and installation of new technical systems, modernization of existing production capacities.

The changes in net investments reflect the nature of economic growth in a given period:

– if NI> 0 (i. e. GI> AC), then the economy is growing, as the expanded reproduction and increase in production capacity are provided;

– if NI = 0 (i. e. GI = AC), economic growth is absent, production capacity does not change, simple reproduction is carried out;

– if NI <0 (i. e. GI <AC), decline in productive capacity, a reduction in production outlet and increase in depreciation level of fixed assets are inevitable.

High level of depreciation of fixed production assets and the lack of investment resources for their reproduction in most industries limit the development of the national economy.

According to Table 2, there are problems in management of fixed assets, their renewal and expansion in many industries. The average level of wear at the end of 2012 amounted to 47.7%, which is above the critical level, defined by indicators of economic security. This situation with the state of fixed assets is related to the problem of reproduction of fixed assets of productive sectors at the end of the last century, as well as poor development of financial instruments to attract investment.

The average level of wear in the sector «transport and communication» from 2008 to 2012 was 55.9%, an increase over the five years from 55.1 to 56.2% in absolute and 2% in relative terms. Transport and communication are essential infrastructural elements of economy and their state and development influence growth in general.

Importance of transport for economic development is undeniable and consists of:

Table 1

Investments in fixed assets, bln rubles.

Год Year	2002	2004	2006	2008	2010	2011	2012	2013 (6 мес./6 months)
Инвестиции, млрд руб. (без учета инфляции) Investments, bln rubles(excluding inflation)	1504,7	2729,8	4730,0	8782,0	9151,0	10776,8	12279,0	4758,1
Инвестиции, млрд руб. (с учетом инфляции) Investments bln rubles (adjusted for inflation)	1504,7	2181,44	3126,63	4580,8	4033,1	4476,56	4785,66	-

Table 2

Depreciation of fixed assets by economic activity, % at year-end

Виды экономической деятельности Economic activity	2008	2009	2010	2011	2012
Все основные фонды Total fixed assets	45,3	45,3	47,1	47,9	47,7
из них по видам экономической деятельности: of them by economic activity:					
сельское хозяйство, охота и лесное хозяйство agriculture, hunting and forestry	42,2	42,2	42,1	42,8	42,5
рыболовство, рыбоводство fishing, fish farming	62,7	65,3	64,7	65,9	65,1
добыча полезных ископаемых mining	50,9	49,6	51,1	52,2	51,2
обрабатывающие производства manufacturing activities	45,6	45,7	46,1	46,7	46,8
производство и распределение электроэнергии, газа и воды production and distribution of electricity, gas and water	51,2	50,7	51,1	50,5	47,8
строительство construction	45,5	46,9	48,3	47,5	49
оптовая и розничная торговля; ремонт автотранспортных средств, мотоциклов, бытовых изделий и предметов личного пользования wholesale and retail trade; repair of motor vehicles, motorcycles and personal and household goods for personal use	33,8	33	33,6	36,5	39,8
гостиницы и рестораны hotels and restaurants	40,3	41	41,2	41,8	42,5
транспорт и связь transport and communication	55,1	54,8	56,4	57,2	56,2
финансовая деятельность financial activity	33,1	39,2	38,6	44	42,1
операции с недвижимым имуществом, аренда и предоставление услуг operations with real estate, renting and business activities	31,9	31,1	35,3	34,6	36,3
государственное управление и обеспечение военной безопасности; социальное страхование public administration and defense; social insurance	47,9	48,3	50,2	54	53,5
образование education	51	52,3	53,2	54,3	54,3
здравоохранение и предоставление социальных услуг health and social services	50,6	51,5	53,3	53,9	52,7
предоставление прочих коммунальных, социальных и персональных услуг other communal public, social and personal services	40,7	43,4	44,5	43,5	44,9

– ensuring conditions for production, delivery of production resources, movement of workers to and from work;

– introduction of new natural resources (including minerals) to national economy when developing new areas;

– communication between industry and agriculture;

– communication between producers and consumers;

– optimization of co-production by sectors, regions and countries;

– ensuring territorial links between countries, republics, territories, regions;

– ensuring the country's defense.

The lack of investment leads to a critical level of fixed assets depreciation. On Russian railways this level according to the financial statements for the period 2008–2012 increased by more than 1.5 times, from 23 to 36%. According to experts, the actual level of depreciation of fixed assets of rail transport is much higher and is more than 63–65%, and some experts believe that it is more than 70%. The most difficult situation persists in electromotive sector, whose level of wear reached 95%. The same situation is with diesel traction (in 2012–93.2%). There is still a high percentage of freight wagons' wear, about 80%. This once again shows that the condition of traction rolling stock is approaching a critical level. Average age of locomotives is over 28 years, and the total percentage of faulty electromotives by 2011 reached 12%.

The data in Table 3 show that the level of wear on the railway transport does not decrease, despite the increase in the volume of investments (Table 4). In this connection intensification of investment and innovation processes is required to overcome this negative trend.

One of the main reasons hindering the development of railways in Russia is that depreciated assets are sorely lacking even for simple reproduction; respectively the flow of gross investment is required to solve the problem of at least replacing the old fixed assets with the new.

Critical level of system's wear from the perspective of development is reached at the level of about 70%. Real depreciation of fixed assets of rail transport approached the critical threshold and there is a need for radical changes for normal further functioning of the industry.

On the railways, investment in fixed capital has increased markedly in recent years and in 2010 amounted to 317.4 billion rubles, in 2011–395.4 billion rubles, and in 2012–480.1 billion rubles, but it should be noted that the decline in investment in 2009 occurred due to the effects of the global economic crisis.

Accumulated depreciation of fixed assets is largely caused by the transition from a planned to a market economy in the 90-ies of XX century. In the period 1992–2000 available reserves of rolling stock and maintenance equipment were enough to maintain flawless and safe operation of rail transport, but needs of investment activity in the circumstances of a financial deficit could not be satisfied in full. And thus depreciation of fixed assets grew. For breaking the current trend in the current negative indicators it is necessary to find methodical approaches, which are time adequate, to justify the investment volumes with the level of depreciation and its possible thresholds.

To estimate the volume of input and disposal of fixed assets for the purpose of monitoring thresholds of deterioration factor it is advisable to use two factors: depreciation ratio – an indicator of the need for renewal of fixed assets, and their rate of growth – a measure of the intensity of renewal of fixed assets.

Growth rate and depreciation ratio of fixed assets have been already used for a long time in the analysis of economic activities of organizations of various industry sectors, including railway transport. They help plan reasonably volumes of input and disposal of fixed assets by groups in the context of industrial complexes, depending on their level of wear. To determine the input of fixed assets with the planned index of reduction of depreciation ratio the following formula can be applied

$$ОФ^{i}_{вв} = \frac{(\sum АМ + ОФ_{выб}) \cdot K_{пер} \cdot (1 + J_{изн})}{100},$$

where $ОФ^{i}_{вв}$ – input of fixed assets;

SAм – accrued depreciation at initial cost for the period of fixed assets operation;

$ОФ_{выб}$ –retirement of fixed assets;

$K_{пер}$ – revaluation coefficient of fixed assets' initial cost;

$J_{Киз}$ – index of fixed assets' depreciation reduction.

To maintain the existing level of depreciation of fixed assets input value of fixed assets can be determined by the formula:

$$ОФ^{i}_{вв} = (SАм + ОФ_{выб}) \cdot K_{пер}.$$

Conclusion.

Balance between input and retirement of fixed assets will maintain the proportions of the development of their individual groups in the context of industrial complexes and structural units of rail transport in order to modernize the production potential.

Keywords: railway transport, investments, deterioration, input of fixed assets, depreciation, revaluation, innovations.

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