Relationship between the categories of "digital" and "commodity" rents

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Abstract. The object of research is the relations that develop regarding the raw material rent and the relations regarding the digital rent in this publication. The purpose of the study is to compare the categories of raw material and digital rent in the mining industry. The work was methodologically based on the use of the following methods: analysis and synthesis, deduction and induction, and the system approach. It was revealed that mining enterprises in the context of the digital revolution become the owners of two types of rents: raw materials and digital, which means the complication of budgetary relations with the state. To determine the nature of these relations, the need to compare the foundations, nature, and forms of manifestation of raw material and digital rents was shown. Conclusions were drawn in the work. It is determined that the cause of raw material rent is the right of ownership of land, and digital rent is the network effect, that is, the specifics of technology. It is emphasized that there are three subjects in classical rent relations: capitalists, while consumers and producers of digital products are present in digital rent relations. It is shown that the relations that develop regarding the raw material rent have a longer character of action compared to the relations regarding the digital rent. It is substantiated that the relations that develop over the raw material rent are formed only in the sphere of the use of natural resources, while the relations regarding the digital rent exist in any part of the digital economy. It is presented that the origin and movement of raw material rent is weakly related to technological progress, while digital rent has grown directly from the digital revolution. It is revealed that the phenomenon of digital rent is based on a special resource – creative.

1 Introduction

In the XXI century, despite a lot of trends associated with the task of ecologicalization of modern society, [12] with the beginning of implementation of the concept of sustainable development and lean production, the economy's need for raw materials and their importance for national economies remains. Mineral resources form the basis for the development of many significant countries, for example, Canada, South Africa, Russia, Australia. The industries operating in the direction of mineral resources extraction provide these countries with a significant part of their income. As before, the growth rate of the world economy correlates
with the growth rate of extraction and utilisation of minerals. At the moment the annual volume of production of the mineral and raw materials complex of the world, according to expert estimates, is estimated at 1.0–1.5 trillion dollars, with about 50% of hydrocarbons, 25–35% metals [8].

In Russia, the share of mineral and raw materials complex is more than one third of the gross domestic product of the country, so the extraction of minerals and their primary processing provide the Russian budget with more than half of foreign exchange earnings and occupy a significant place in the revenue part of the state budget. Russia holds one of the leading positions in the world production of minerals. Thus, the country ranks first in diamond mining, giving the world markets about a third of their supply; Russia owns 25% of the world's natural gas reserves; 10% of the world's gold production; it plays a significant role in the sector of liquid hydrocarbons production, for example, Russian oil accounts for 8% of the world's reserves [5].

The significant role of the mineral and raw materials complex determines the interest of the state in its activities and the consequent desire of the government to regulate its activities. All possible mechanisms of influence include several varieties: management of industries; implementation of state programmes and orders; pricing policy, etc., but budgetary regulation is of special importance, in relation to the mineral and raw materials complex, the state occupies a dual position: it is both the owner of subsoil and natural resources directly, and at the same time has the highest tax power. The application of tax payments in relation to the mineral and raw materials complex assumes that their collection will provide revenues to the state and subsoil users will receive the necessary rate of profit.

The specific nature of budgetary relations with mining enterprises is that in addition to the usual forms of income in the industry, another type of income is formed here—mountain rent. Of course, the question arises as to who should own this income: the state or the business entity? The state is extremely interested in appropriation of mining rent. However, in modern conditions the problems of rent relations go beyond the distribution of specific income. A lot of new aspects have appeared in research, in particular, we are talking about anti-rent, quasi-rent, the role of rent relations in the world economy, circular economy and the dynamics of civilisations [2], [9].

In addition, the digital revolution, which began at the end of the last century, gaining its momentum and dynamically changing its forms, has affected all sectors of the economy, including the commodity sector [11], [13]. Among other changes in the fuel and energy complex, operating in the conditions of new innovative transformations, a new category is formed: digital rent, which has caused a huge research interest [4]. There is a need to clarify the question of whether there are actually two types of rents in the commodity sector, and if so, how do they relate?

2 Object and purpose of the study

The object of the study is the relationship between the raw material rent and the relationship between the digital rent. The purpose of the study is to compare the categories of raw material and digital rent in the mining industry.

3 Materials and methods

The paper used the system method, analysis and synthesis techniques to study individual types of rents formed in the mining industry. The paper studies the inclusion of mining enterprises in the process of rent relations, including relations regarding digital rent on the basis of analysis and synthesis. A number of conclusions concerning the comparison of the...
The method of deduction made it possible to apply the general foundations of the theory of land rent to the development of the mining industry and to the question of types of modern rents, including differential rent III.

The method of induction allowed analysing various aspects of the digital economy in the energy sector: the network effect, the role of the creative factor, and the use of online platforms to show the causes, specifics, and nature of the digital rent.

In order to realise the research objective of the article, publications from the journals “Coal”, “Economic Policy”, “Foresight”, current data on various shares of energy resources, works of the founders of the theory of rent relations: A. Smith and K. Marx were used in the process of work.

4 Results

In order to compare the two types of rents mentioned above, it is necessary to understand the reasons for their origin and the forms of their realisation. Thus, it is known that the price of each mineral resource consists of a minimum selling price and an added value over and above this price. The structure of the minimum price is as follows: the first component is production costs, the second component is the level of profit necessary to ensure the attractiveness of investments. The addition to the minimum price or the added value of the resource is called economic or mining rent [7]. Theoretically, since resources belong to the whole society within a certain national economy, the added value should also be appropriated by society. The positions of the subjects are determined by the principle: it is important for business to get such a profit that will pay back their investments and give the opportunity to expand production in the future. The state, in its turn, seeks to become the owner of the superprofit or rent received by producers.

Theoretical and methodological foundations of the theory of mountain rent were laid by the English scientist A. Smith within the framework of his research on land rent. In his work “An Inquiry into the Nature and Causes of the Wealth of Nations” it is stated that the farmer endeavours to make a contract with the tenant so that the latter was left with a minimum part of the product. The basis of this share of the product should be the value necessary to compensate the capital spent by him on seeds, agricultural implements, labour, cattle keeping, plus the value of the profit of agricultural capitalists usual for the given territory. That part of the value, which is a surcharge on the basic part of the product, the landowner tries to keep for himself, and it acts as land rent. Thus, in the theory of A. Smith’s theory, rent relations are relations between the landowner and the tenant on the distribution of superprofits [6]. In the same work we can find the foundations of the theory of differential rent I in the presentation of material about coal deposits. Thus, A Smith drew attention to the existence of different coal mines, which differ both in the abundance of coal and location.

The theory of mining rent was developed by K. Marx, who believed that its roots lay in the same foundations as the theory of agricultural differential rent. The available natural forces can be monopolised by an industrialist, it can be a waterfall, a rich mine, fish-rich water, a well-located construction site. In this case, the owner of these resources taken from nature has the right to capture the added profit in the form of rent [3]. The differential rent formed in such a situation, according to K. Marx, has a qualitative and quantitative expression. The qualitative side of rent is that it acts as an economic form of realisation of the right of ownership of land. Especially the above interpretation characterises absolute land rent, which is received by the owners of all lands, regardless of whether the land plots are located on the worst or the best quality land (meaning not only fertility, but also the presence of minerals or any other gifts of nature).

The meaning of the quantitative definiteness of rent is that it is an added value, super-profit. Depending on the causes of origin, K. Marx distinguished differential rent I and...
differential rent II, which respectively depend either on the difference in fertility and location of land plots (subsoil) or the difference in the productivity of additional capital investments in the same plot. It should be noted that the importance of absolute land rent in modern conditions is increasing, as natural resources are becoming increasingly rare goods, but the limited nature of the latter only increases their value to society.

So, natural rent is formed in extractive industries, it can be land, mining, water, transport, tourism (recreational). Ecological rent plays a significant role. The phenomenon of "antirents" has also been formed; this is the definition of excessive profit, which is formed as a result of the application of the most efficient environmental technologies or, on the contrary, as a result of predatory use of natural resources and excessive pollution of the environment.

The category of quasi-rent as a special added value obtained on the basis of the use of reproducible, rather than natural, resources: technological (innovation), managerial (modern management), financial and credit. In each of these situations there is a phenomenon of super-profit, that is, the market price exceeds the individual price of production, the consequence of which is the formation of rent.

In the modern theory of rent relations, in addition to differential rent of the I and II kinds, there is an idea of differential rent of the III kind, i.e. the added value, which appears in such industries, where technological, financial and managerial innovations are introduced [9].

However, quasi-rent arising on the basis of technological progress is very dynamic and transient, as innovations spread rapidly and become public property. After a certain period of time it is formed again, but already in other business segments, where more effective technologies appear. Mining rent has a limited time character, in particular, it grows as a deposit is developed and then may become zero as it is exhausted.

The development of the raw materials sector is included in the prospects of Russia, and its future is already unthinkable without digital transformation [10]. The application of digital technologies in this sphere of economy assumes reliance on technological platforms, related databases, the Internet of Things, and the production of commodity 3d-printers. At the same time, the process of digitalisation serves as the basis for the formation of superprofits, digital rent. The reasons contributing to the emergence of a special kind of added value in the context of the widespread adoption of digital technologies can be varied. In particular, they include:

- relatively low cost of digital products;
- high cost of human capital acquisition costs;
- the material shares of the costs of producing digital products are to a certain extent small;
- in the case of an unimpeded flow of information, it is possible to attract an almost unlimited number of buyers of services.

Digital rent in its specific expression can be formed as a payment for the use of a domain name, for the rent of the location where the information data are placed; on the basis of the use of cloud technologies, etc. In fact, digital rent is a form of differential rent of the III type, as it is based on innovative solutions. At the same time, there are also distinctive features, including, first of all, the diversity of its sources.

Online platforms are directly related to the formation of value proportions in the digital economy [1]. In a certain aspect, they can be assessed as a system of "closed relations" that are formed not between producers and buyers, but interaction with intermediaries. Online platforms are the backbone of the digital economy, its backbone factor, the most important component of the infrastructure. When considering market structures in microeconomics, in particular monopoly, attention is drawn to such criteria as market share, type of product, influence on price, uniqueness of technology.

The digital transformation of the economy has created a new system of criteria, for example, the loyalty factor has gained great importance. The latter factor is primarily focused on consumer involvement: convenience of using digital goods, reduction of consumer costs, E3S Web of Conferences, 458, 05019 (2023) EMMFT-2023 https://doi.org/10.1051/e3sconf/202345805019
speed of order fulfilment, massive concentration of users on the basis of monopolisation, wide coverage of information space. The above features simultaneously act as a basis for rent formation.

The prevalence of large retail platforms and aggregators in the digital economy is itself the basis of market monopolisation in terms of access to consumers by mass retailers. Competition pushes business entities to choose large online marketplaces such as Amazon, Yandex.Market and the like.

So, in the digital economy, a significant part of revenue is concentrated in a small part of this segment. This is a network effect based on the loyalty factor and information unlimitedness. The following examples can be given, for example, YouTube takes the leading position in the United States in terms of video viewing traffic. Special attention should be paid to the effect of the creativity factor in the digital economy, which can also be regarded as monopolistic. Possession of such a unique property gives the right to possess a special income. Creative people have played and continue to play a huge role in the development of digital society.

In general, digital rent has the following features. It is not based on the natural properties of resources, but on technological progress. It is formed in the most diverse parts of the digital economy: in the sector of technology production and digital services. It is characteristic of both companies-vendors and centres-generators of information bases. The formation of digital rent is possible in small e-businesses because of the presence and action of the creativity factor. Digital rent can be transferred to any sphere of production where digital transformation is present and can merge with other types of rents, for example, with raw material rents in the fuel and energy complex. It is associated not only with the nature of production, but also with a special type of product—information, which has a number of specific features. Digital rent is even more transient than any other, as the dynamics of the digital sector is enormous. The peculiarity of digital rent relations is also the participation of the state. As the state stimulates the development of digital transformation, it indirectly supports the growth of digital rents. Let us compare raw material rent and digital rent (Table 1).

<table>
<thead>
<tr>
<th>Features of rents</th>
<th>Raw material rents</th>
<th>Digital rents</th>
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<tbody>
<tr>
<td>Reason for rent</td>
<td>Land ownership</td>
<td>Network effect</td>
</tr>
<tr>
<td>Existence of actors</td>
<td>Three actors</td>
<td>Traditional market relations: purchaser-seller relationship</td>
</tr>
<tr>
<td>Time interval</td>
<td>Longer lasting effect</td>
<td>Limited scope of action</td>
</tr>
<tr>
<td>Prevalence of rents</td>
<td>Only in the use of natural resources</td>
<td>In any part of the digital economy</td>
</tr>
<tr>
<td>Link to technological progress</td>
<td>Weakly expressed</td>
<td>Dynamic nature</td>
</tr>
<tr>
<td>Creative nature</td>
<td>Doesn’t take place</td>
<td>Directly related</td>
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</tbody>
</table>

Table 1. Comparison of raw and digital rents’ characteristics

5 Conclusion
3. In classical rent relations, there are three subjects: landowners, wage labourers, and agricultural capitalists, while in digital rent relations there are consumers and producers of digital products.

4. Raw material rent relationships are longer than digital rent relationships.

5. Raw material rents only exist in the use of natural resources, while digital rents exist in any part of the digital economy.

6. The origin and movement of commodity rents are loosely linked to technological progress, while digital rents have grown directly out of the digital revolution.

7. The phenomenon of digital rents relies on a special resource, the creative factor of the economy, while raw rents are based on factors given by nature.

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