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Article

Methods of State Regulation of Natural Monopolies' Activities

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Abstract: This article analyzes potential issues arising in the market due to the activities of natural monopoly organizations. These include price increases, cartel agreements, disruptions in market demand, dominance of single products, causes of market failures, and problems related to market participants and types of activities. The theoretical and practical aspects of state regulation methods for the activities of natural monopoly organizations are discussed. The article also explores the goals and forms of regulation from the perspective of profitability.

Keywords: monopoly, natural monopoly, oligopoly, competitive environment, competition mechanism, "market failures," pricing theory, profitability, limited price increase, relative price growth, social policy, environmental protection, economic security.

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Introduction

The role of the state is pivotal in the development of a country's economy. Governments undertake extensive measures to foster a competitive environment across sectors, ensure economic growth, enhance competitiveness, deepen the processes of economic modernization and diversification, and create favorable conditions for attracting investments into various industries and sectors. A crucial part of this effort involves regulating and managing monopolistic situations in industries, minimizing natural monopolies, and undertaking restructuring initiatives to streamline such entities.

The theoretical aspects of natural monopolies are rarely debated by economists. However, in practice, organizations subject to regulation in many countries often fall under the category of natural monopoly sectors.

Firstly, natural monopolies are sectors characterized by natural monopoly features due to varying technological developments and the optimal scale of organization relative to demand. These characteristics differ between small transitional economies and large industrialized nations. For instance, the automobile plant in Asaka can be considered a natural monopoly within Uzbekistan's market context. In contrast, in Western countries, the automobile industry is regarded as a highly competitive sector.

Secondly, the legal classification of a sector as a natural monopoly holds little practical significance in Western countries. Laws concerning natural monopolies and their regulation are generally absent in these nations. For example, in the United States, the concept of "natural monopoly" is regarded as an economic term and is not reflected in U.S. legislative documents.

In contrast, the legal interpretation of "natural monopoly" is prevalent in the CIS countries, where many states have enacted specific laws on natural monopolies. In other words, the issue of regulation is of practical importance. Regulation policies in natural monopoly sectors typically differ significantly from general antitrust policies.

Moreover, the mere presence of natural monopoly features in a sector does not always justify or necessitate the introduction of specific regulatory measures for that sector.

Analysis of Relevant Literature

The regulation of natural monopoly entities is carried out through the following methods [1]:

- **Price regulation**: Setting or determining prices (tariffs) or establishing their maximum (or minimum) levels.
- **Consumer prioritization**: Identifying consumers who must be served and, if it is impossible for natural monopoly entities to fully meet the demand, setting minimum levels of service provision.

Other methods of regulation in line with legislative provisions may also be applied to oversee the activities of natural monopoly entities.

The regulation of natural monopoly organizations can be described as the intervention of state authorities (national, regional, or local) in the functioning of market mechanisms, with the aim of adjusting the behavior of market participants and influencing the outcomes of market operations.

In Uzbekistan, a number of measures have been implemented to prevent and regulate market failures in goods and financial markets, as well as to foster a competitive market environment. To develop competition in goods and financial markets, ensure equal opportunities for business entities, promote transparency, and further improve public procurement procedures, the following actions have been undertaken in accordance with the State Program aligned with the *2017–2021 Action Strategy* for the five priority areas of development in Uzbekistan during the "Year of Science, Enlightenment, and Digital Economy Development" [2]:

- Proposing to annul decisions of state authorities that violate competition laws and imposing sanctions on their responsible officials.
- **Detecting and preventing cartel agreements and collusion** in collaboration with law enforcement agencies.
- **Monitoring the establishment of state-owned enterprises** to ensure compliance with regulatory frameworks.
- **Developing a unified draft law** by consolidating the laws of Uzbekistan on “Competition” and “Natural Monopolies,” based on international experience and mechanisms to radically improve the competitive environment.
- **Opening monopoly sectors to the private sector** where free competition can be introduced, amending and supplementing existing legislation accordingly.

Common Forms of State Regulation:

1. **Structural Regulation:** This involves determining which organizations are permitted or obligated to participate in specific activities, identifying the need for new infrastructure, and allocating concessions (licenses) for managing distribution and other related activities.
2. **Behavioral Regulation (Price Regulation):**
   - Directly through price or tariff setting.
   - Indirectly via tax and subsidy policies.

Behavioral regulation also includes enforcing competition laws to eliminate monopolistic or oligopolistic dominance. This form of regulation is generally aimed at supervising and influencing organizational behavior.

A price is considered a **monopolistic high price** if it meets either of the following criteria [3]:

- It exceeds the sum of necessary costs and profits required for the production and sale of the product.
- It is aimed at covering unreasonable expenses or generating additional profits by reducing product quality.

Price Regulation for Natural Monopoly Entities:

Price setting is carried out by an authorized body as follows [4]:

- Natural monopoly entities submit price (tariff) proposals and relevant calculations to the authorized body in accordance with procedures established by the Cabinet of Ministers of the Republic of Uzbekistan.
- **Draft price (tariff) proposals for goods offered by natural monopoly entities** are reviewed by the authorized body within one month. This review considers the impact of these prices on the cost of consumer products.
- Despite its advantages, **price cap regulation** is not perfect and has notable shortcomings [6]. The main issue is the reduction in the sector's investment attractiveness. Many critics argue that price caps are often set at levels overly favorable for monopolists.

Research Methodology

The study employed a range of methods to analyze and regulate the natural monopoly sectors, including:

- Comparative analysis and synthesis,
- Induction and deduction,
- Expert evaluation,
- Scientific abstraction,
- Statistical grouping,
- Correlation and regression analysis, among others.

Analysis and Results The activities of natural monopoly organizations disrupt the competitive environment in the market, giving rise to the concept of **"market failures."** The following types of market failures make the economic rationale for introducing regulation an objective necessity (Figure 1).

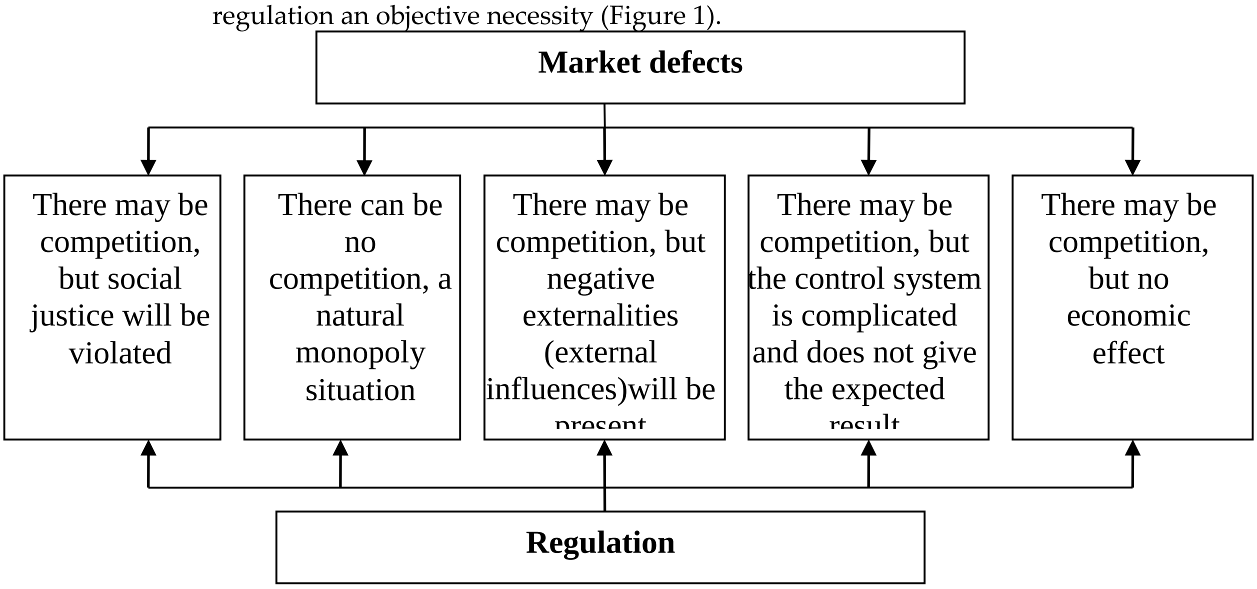

Figure 1. Reasons for state regulation of natural monopolies

The superiority of state intervention lies in its ability to address issues that increase associated costs, meaning the cost/benefit ratio of regulation exceeds 1. This occurs in the following cases:

- **In a natural monopoly scenario**, competitive solutions are not viable.

- **Where competition exists**, it may yield relatively effective outcomes but could fail to achieve optimal results due to issues linked to market participants and types of activities.
- **When a competitive solution is present**, but due to externalities or information asymmetry (a breakdown in the "competition-efficiency" correlation), it may still be inefficient.

In such circumstances, state intervention is justified.

Forms of Regulation Regulation is implemented in various forms, which can be classified into **direct** and **indirect methods**:

Direct Regulation: This involves specific measures or actions targeted directly at market participants or groups of participants. It includes interventions aimed explicitly at certain entities, ensuring compliance with market rules.

Indirect Regulation: Indirect methods affect all real and potential participants by influencing broader economic and market conditions. These mechanisms focus on creating an environment conducive to fair competition, addressing asymmetries, and mitigating externalities.

Social policy, environmental protection, and security are issues that cannot be directly addressed through market mechanisms alone. In such cases, regulation through a system of standards is applied.

Up until the early 1980s, the **price regulation system** dominated. Under this approach, prices were regulated along the entire vertical chain—from producer to end consumer. These prices were not allowed to exceed the level necessary to cover justified costs. Decisions regarding the construction and expansion of new capacities were made in a centralized manner.

The forms of regulating natural monopoly organizations can be categorized based on their objectives as follows (Figure 2):

- **Ensuring affordability**: Regulating prices and tariffs to make essential goods and services accessible to the public.
- **Encouraging efficiency**: Establishing standards and incentives to optimize resource use and reduce waste.
- **Fostering competition**: Introducing reforms to create opportunities for competitive market entry where feasible.
- **Promoting social and environmental goals**: Aligning organizational practices with broader societal priorities like sustainability and safety.

These categories reflect the multifaceted goals of natural monopoly regulation.

Focusing on the values in the table:

- Energy production costs (**rY, X1=0.9716**) and total electricity consumption (**rY, X3=0.9673**) are strongly correlated with the outcome variable **Y**.
- The volume of energy produced (**rY, X2=0.6600**) and the installed capacity of power plants in Uzbekistan (**rY, X4=0.7322**) show moderate correlation.

Since the condition **rX1, X2<0.8** is met, indicating no multicollinearity among the factors, the analysis can be further processed using the **EViews** software.

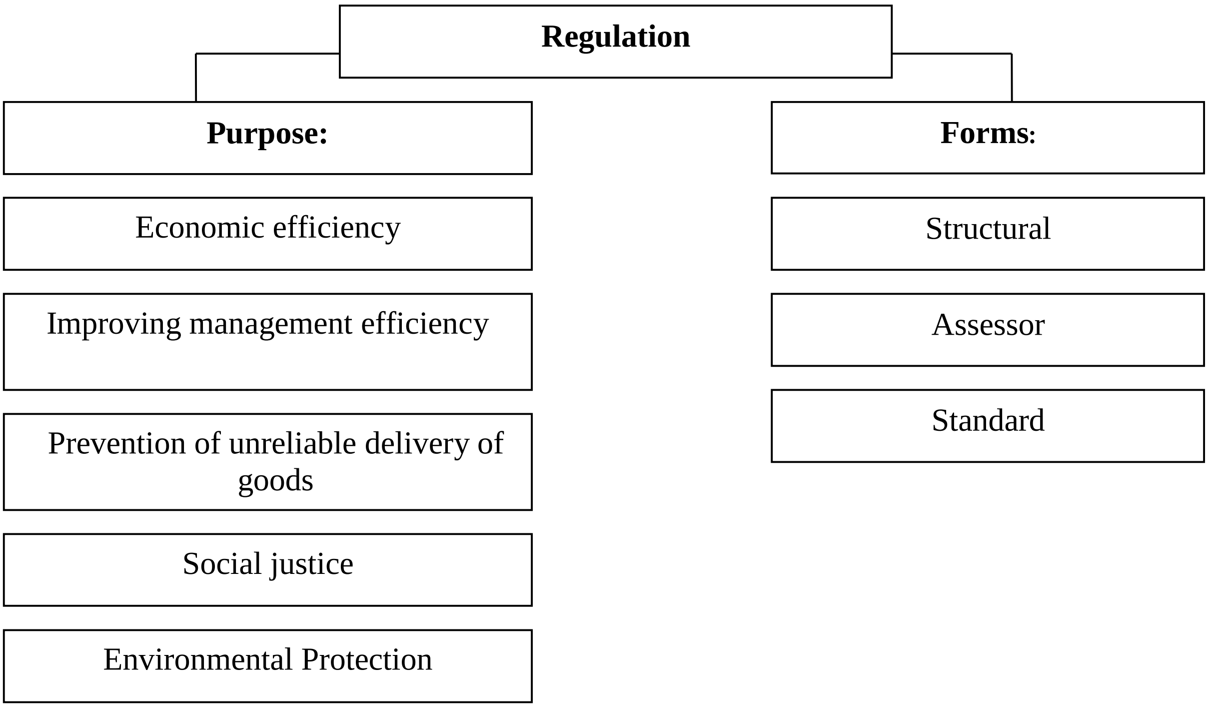

Figure 2. Natural monopoly organizations organize goals and forms

Natural monopolies require special regulation by the state. In these sectors, administrative methods are applied to achieve societal welfare goals, whereas in other economic sectors, such outcomes are typically achieved through "natural" means, i.e., the influence of competitive mechanisms.

Thus, the establishment of antimonopoly bodies aligns with the creation of regulatory bodies for natural monopoly organizations. Many developing and transitional economies, including Uzbekistan, find it expedient to combine the functions of these two entities into a single institution, often a state agency.

Economists explain this integration by pointing to the lack of qualified personnel and experience in regulating natural monopoly organizations, as well as the partial overlap in the issues addressed by antimonopoly regulation. This is particularly evident in cases where a natural monopoly entity abuses its dominant position (or monopolistic power) for malicious purposes.

Some models have successfully delineated the competencies of antimonopoly authorities and regulatory bodies for natural monopolies. Typically, the antimonopoly authority focuses on preventing abuses of monopolistic power (even if such tasks overlap with regulatory functions), while the regulatory authority is tasked with setting prices and tariffs.

This division of responsibilities ensures that both market competition and public interests are effectively safeguarded.

The emergence of new policies for regulating natural monopolies worldwide has led to the development of models with solid legal frameworks. In the CIS countries and some developing nations, it is widely considered necessary to adopt specific laws that establish rules and norms for all regulated sectors of natural monopoly organizations.

Thus, different models for regulating the activities of natural monopoly organizations exhibit distinct systemic elements. Various tools can be employed for regulating the activities of natural monopoly organizations, which can be broadly categorized into the following three groups:

1. **Direct price and tariff regulation for products of natural monopoly entities**: This involves setting specific prices and tariffs for goods and services provided by natural monopolies to ensure accessibility and fairness for consumers.

2. **Indirect regulation of prices and tariffs by setting limits on profitability and price growth**: This method uses mechanisms to cap returns or limit the rate at which prices and tariffs can increase, maintaining affordability while encouraging efficiency.

3. **Utilizing competitive mechanisms to grant production rights under natural monopoly conditions**: This approach introduces controlled competition by granting production or service rights through tenders or concessions, fostering efficiency and innovation within the monopoly framework.

These tools reflect different approaches to balancing consumer interests, encouraging investments, and maintaining market stability in natural monopoly sectors.

Direct price setting for products of natural monopoly organizations is one of the traditional and widely used methods of price regulation. In this method, the regulator sets prices for goods and services provided by monopoly enterprises under conditions where they cannot rely on competitive market forces. Such prices are designed to guarantee the economic efficiency of production and ensure the maximum feasible consumption (demand) of the goods and services offered.

The price set by the regulator must also cover investment costs and include a normative profit margin that can help maintain the business and prevent capital flight. Essentially, the price regulation is based on a cost-plus-profit model, where the regulator considers the costs incurred by the monopoly, as well as the required profit margin to sustain its operations.

The goal of this pricing approach is to establish prices that:

1. **Ensure the provision of services/products in economically efficient volumes**: The prices must be set at a level that encourages the monopoly to supply the market with an optimal quantity of goods and services.

2. **Encourage investment and business sustainability**: The prices must account for the need to cover costs and generate enough profit to support the monopoly's long-term operation and investment.

3. **Avoid the exploitation of consumers**: The price should not be set too high to harm consumer interests while allowing the monopoly to remain profitable.

This method of price regulation is widely applied in sectors where competition is impractical due to the natural monopoly structure, such as utilities, transportation, and some infrastructure services.

The direct price setting for natural monopoly products offers several advantages, which contribute to maintaining economic efficiency and consumer welfare. The advantages include:

1. **Stability and predictability of prices**: Price regulation ensures that goods and services provided by monopoly enterprises have a clear and stable price, which is beneficial for consumers, as they can rely on these prices without the volatility often seen in competitive markets.

2. **Financial transparency for the regulated enterprise**: The regulatory authority gains access to detailed financial and accounting information from the monopoly, which helps in assessing the financial health and operational efficiency of the enterprise. This allows regulators to make informed decisions based on the actual cost structure and profit margins of the monopoly.

3. **Prevents the abuse of market power**: Even though direct price setting is employed; the regulator does not have absolute control over the monopoly’s prices in all cases. The price setting mechanism is designed to ensure that monopolies do not exploit their position by charging excessively high prices, while still enabling them to cover their costs and generate sufficient revenue for reinvestment and sustainability.

In Uzbekistan, the regulation and management of natural monopolies in terms of pricing follows these principles. The government oversees the setting of tariffs and prices for monopoly enterprises, ensuring that they are reasonable and allow the business to continue operating efficiently. This often involves balancing the need for fair consumer prices with the enterprise's need for profitability and the incentive to continue investing in infrastructure and service improvements.

The key elements of this system include:

- Regular assessment of the monopoly's costs and financial performance.
- Setting prices that are aligned with the cost structure, ensuring that the monopoly can maintain profitability while serving the public interest.
- Regular monitoring to prevent price manipulation or exploitation of consumers by the monopoly.

Such a regulatory framework aims to maintain a balance between the monopoly's financial sustainability and the protection of consumers, ensuring that essential services are provided at reasonable prices.

Regulation of Profitability Standards In many countries (especially in the United States and the United Kingdom), the regulation of natural monopolies' prices through the setting of profitability standards on invested capital is common.

The profitability standard is applied by the regulatory body in relation to the amount of invested capital. This leads to issues such as evaluating assets based on market or accounting (initial) value. Regulating profitability ensures that a company can only raise its prices when costs increase, and consequently, higher revenues are required to achieve the previous level of profitability.

Even though there are difficulties related to assessing the level of invested capital and costs, regulating natural monopolies through profitability standards has certain drawbacks. For example, it does not incentivize organizations to improve operational efficiency because when costs rise, prices can be increased.

In our opinion, in Uzbekistan, directly regulated prices should be applied to the sectors governing natural monopolies, while the regulation of profitability standards could be used for monopolistic enterprises that are not related to natural monopolies.

Regulating Price Increase Limits. Among all the tools for regulating the activities of natural monopolies, price caps are considered the most "recent" and rapidly spreading regulatory method. This method emerged in the United Kingdom during the process of restructuring, privatization, and developing a new regulatory model in the telecommunications sector. The method was proposed by Professor Littlechild in 1983 in response to the government's request to prepare a report on regulating the telecommunications sector after the privatization of British Telecom.

The goal of the new regulatory model is to adhere to the following conditions:

- Protecting consumers from the abuse of monopolistic power for harmful purposes.
- Encouraging the monopolist to operate efficiently;
- Ensuring the prospects of privatized businesses;
- Reducing regulatory issues;
- Promoting the development of competition;
- Increasing budget revenues from privatization.

Although one of these conditions may conflict with another, Littlechild considered adopting the new regulatory method as the most rational decision. This method later became known as price cap regulation. The relative price increase limit was set as follows:

$$\Delta P = \Delta PR - X, \qquad (1)$$

ΔP - the relative price increase limit;

ΔPR - retail price increase;

X - the real expression of the relative price increase planned by the regulatory authority.

According to the authors of this approach, the formula presented should ensure the protection of consumers from the increase in prices, while also encouraging the company to improve its efficiency and reduce costs. The lower the costs, the higher the profit. Additionally, the regulation of prices based on this formula is much easier compared to limiting the profitability rate, as it does not require the assessment of costs and the amount of invested capital.

Littlechild believes that the introduction of the price increase limit over time is necessary, as it applies until competition is established in the sector (for "British Telecom," this period was initially set at 3 years). However, as "British Telecom" maintained its leadership position and competition was insufficient, the reconsideration led to a change in the X indicator value.

In 1986, the privatized "British Gas" became the second company to have price increase limits set. As a result, the formula for calculating the price increase limit was adjusted somewhat.

$$\Delta P = \Delta PR - X + \Delta C \qquad (2)$$

X – the expected growth in efficiency (for "British Gas," it was set at a 2% annual rate);

ΔC – the change in the cost of gas extraction and processing.

The key difference is that consumers themselves either prevented the increase in wholesale prices or benefited from a decrease in the extraction and processing costs (a few years later, extraction costs were reduced, and consumers gained from this).

Below are two advantages of regulating the price cap:

1. **Simplicity of calculation –** The formula does not require extensive study of accounting reports or the cost calculation of services. The price cap is determined using only two indicators: the price index and the X factor. (It is worth noting that, in practice, selecting the X factor is just as challenging as selecting a similar index for price increases.) Thus, this formula also simplifies the activities of the monopolist.
2. **Incentive to improve efficiency and reduce tariffs –** When the formula is determined for a period longer than one year, any benefit gained by reducing costs (without affecting service quality) remains with the company. This motivates the company to improve production efficiency by reducing costs per unit of output. If, upon the formula's review at the end of the period, the regulator considers that the monopolist could further reduce costs, the X factor would be increased in the subsequent revision.

The transfer of production rights based on competition in the context of natural monopolies. Although monopolistic elements are inevitable in the fields of natural monopolies due to technological and economic factors, economists have succeeded in introducing a competitive element to the foundation of natural monopolies. This method envisions temporary ownership and concession, referred to as sector management, which involves competition for the right to be the monopolist (through negotiations and tendering processes).

This regulatory approach, like other methods, does not guarantee the same level of efficiency as market competition, but it addresses many of the shortcomings associated with other models.

Based on the above considerations, when drawing a conclusion about the issues awaiting resolution regarding the management and regulation of natural monopolies in Uzbekistan, it can be stated that the direct price-setting method for the products of natural monopolies is gradually being replaced by other methods more suited to the market economy. These include regulating the price increase limits and granting production rights based on competition, among others.

In order to ensure the practical implementation of tasks related to the reform of the national electricity grid, in accordance with the Decree of the President of the Republic of Uzbekistan dated March 27, 2019, No. PҚ-4249, "On the Strategy for Further Development of the Electric Power Industry of the Republic of Uzbekistan," the State Joint-Stock Company (SJSC) "Uzbekenergo" was liquidated, and the joint-stock companies "Thermal Power Stations," "Uzbekistan National Power Grid," and "Regional Power Grids" were established.

Conclusion. It is crucial to clearly define the types of activities that fall under natural monopolies. It should be emphasized that only a part of the economic activities in sectors such as the gas industry, electricity, railway transport, and communications falls under natural monopolies and requires state regulation. Other activities in these sectors can operate effectively under competitive conditions. Therefore, creating a competitive environment requires specific structural changes.

Foreign experience and modern theoretical developments indicate that the most effective direction for government economic policy towards natural monopolies is their restructuring, i.e., adapting them to market conditions where they can become viable and efficient. This approach has already begun to be implemented in Uzbekistan.

In the national electricity sector, which falls under natural monopolies, restructuring is being undertaken to develop a modern competitive environment and attract investment. This involves fundamentally improving the institutional and organizational-legal foundations of the production and supply of electricity.

In providing electricity to consumers across the republic, each stage having its own owner creates opportunities for effective management, enhances the industrial potential of the country's economic sectors and regions, stimulates entrepreneurial activity, and improves the well-being of the population and quality of life.

Natural monopolies are an objective phenomenon that all countries' economies are compelled to address, regardless of their economic and social system. In such conditions, it is important to continue improving regulatory measures by the state to minimize the potential harm caused by natural monopolies.

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