ON THE ISSUE OF CATEGORICAL FORMALIZATION OF THE PUBLIC GOOD PHENOMENON

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Methods. The scientific results presented in the paper were obtained through the application of such general scientific research methods as: abstraction – used to establish the essence of the concept of «pure public good»; induction and deduction – employed in the formation of criteria for identifying economic goods; grouping – utilized in creating an improved classification of economic goods; generalization and specification – applied in distinguishing between pure and mixed public goods.

Results. The study led to conclusions regarding the fact that traditional notions, shaped by primitive economism with the market as a self-sufficient and independent sphere separate from the functioning of other components of social organization, cannot explain the existence of such types of goods that society needs irrespective of the presence of effective demand. This necessitates a gradual departure from the neoclassical paradigm of economic research.

It has been revealed that earlier scientific inquiries into the study of the phenomenon of public goods did not address the question of its essence but relied solely on signs. Therefore, the problem of identifying deep interconnections that determine public goods and complement previous interpretations of its nature becomes relevant. The category of «pure public good» has been defined, and the reasons for its existence have been demonstrated. Criteria for classifying a good as a public-purpose commodity have been identified, and an improved classification of economic goods has been provided. The essential differences between pure and mixed types of private and public goods have been discussed.

Novelty lies in providing an original definition for the category of «pure public good», which, unlike existing definitions, emphasizes the direct reasons for the existence of the phenomenon of public goods. Criteria for the classification of economic goods have been identified.

Practical value lies in establishing the essence of the concept of «pure public goods», as well as identifying additional criteria, allowing for a more precise classification of economic goods with a lower probability of misclassification. This serves as a foundation for implementing more effective government policies regarding the functioning of the public sector and its financing directions.

Keywords: public goods, club goods, common resources, criteria for classifying public goods, conflict of private and public interests in providing public goods, explicit and implicit needs.

Statement of problem. In the modern conditions of economic development, questions about providing society with goods that, for various reasons, cannot be fully provided by the private sector become particularly relevant. Education, healthcare, national defense, social infrastructure, culture, and art are goods that acquire special significance for the economic development of each national economy but are not always attractive to entrepreneurs. Typically, the production of such goods is undertaken by the government. However, for various reasons, this institution does not always show high efficiency in addressing this issue. Therefore, questions related to the organization of providing society with goods that do not fit within the standard boundaries of market relations are particularly important for research.

Analyses of recent papers. The concept of public good” became the subject of scientific research only in the second half of the 20th century. However, the scientific issues directly
related to it have been raised repeatedly over an extended period, evolving and acquiring new meanings. According to the first, most comprehensive interpretation of this concept formulated by W. Mazzola, a public good is «a special value and benefit that exists outside of preferences, where it is impossible to separate anyone from using them. Their consumption is joint and equal for each household» [1, pp. 24–74].

In other words, this type of good is characterized by two main features: indivisibility (non-rivalry) and non-excludability from consumption [2, p.738]. Indivisibility or the absence of competition implies that, unlike the consumption of private goods, all subjects can consume public goods without exception in equal shares, without diminishing their availability for anyone. Once in circulation, such a good does not disappear from it. Characterizing this property through marginal analysis, it can be asserted that the marginal costs of providing these goods to one additional consumer are zero. Non-excludability means that there is no mechanism that would hinder the consumption of the good, as restrictions are either impossible or prohibitively expensive. The utility obtained by one individual does not exclude others from consumption and does not reduce the availability of the good. Based on this definition, various authors include clean air, education, national security, literacy levels, control of water supply, street lighting during dark hours, etc., in the category of public goods [3].

Operating with this definition, modern researchers focus their attention on the problem of the qualitative and efficient production of public goods by the public sector of the economy. In this research direction, notable works by: A. Dlugopol’skiy, R. Greenberg, A. Rubinstein, O. Belousova, R. Nureev, and M. Blaug should be mentioned [4–7]. Despite their significant contributions to the study of goods with characteristics of public goods, the mentioned scholars have not formulated clear criteria for their classification. Researchers have also not reached a consensus regarding the essence and distinctive features of pure public goods, allowing them to be distinguished among other consumer values.

Formulations of definitions for the concept of «public good» in contemporary economic science reflect characteristics that characterize some traits of public goods, but they do not necessarily capture their essence. As mentioned earlier, the provision of public goods is typically the responsibility of the government, and there is usually no disagreement on this point. The fine-tuning of the mechanism for providing public goods is also often delegated to the authorities. Despite a certain consensus on elucidating the essence of public goods, debates around this phenomenon persist.

Scientists diverge in opinions regarding which characteristic is more essential, and whether it is possible to limit the criteria for classifying a good as public based solely on indivisibility and non-excludability. In the extensive body of theoretical and educational materials on this issue, there is no definitive and exhaustive answer. Some scholars imply that only one of the two properties is crucial, while others argue for the importance of both. Even those authors actively using the term do not necessarily focus on deriving a fundamental essence for the definition of public goods. To address this issue, it appears important to trace the interconnections and relationships between concepts and to identify the reasons for the existence of the phenomenon of «public good».

**Aim of the paper.** The goal of this article is to define universal criteria for pure public goods and to identify the profound, essential reasons for the existence of this type of good.

**Materials and methods.** Examining the mechanisms of production and distribution of various goods, scientists have encountered consumer values that could not be provided to society based on market principles. For instance, at his time, Adam Smith discovered that a significant number of English ports, docks, and shipyards were in a state of disrepair, which was unacceptable for Britain as a maritime nation. He also observed a general decline and the need for the reconstruction of schools and temples located in the provinces. Adam Smith believed that the free market best ensures and regulates the alignment of interests and the achievement of both individual and societal welfare. Nevertheless, he endowed the state with the function of controlling such areas. «The third and last duty of the sovereign or commonwealth
is that of erecting and maintaining those public institutions and those public works, which, though they may be in the highest degree advantageous to a great society, are, however, of such a nature that the profit could never repay the expense to any individual or small number of individuals; and which it, therefore, cannot be expected that any individual or small number of individuals should erect or maintain» [8, pp. 675–676]. Thus, Adam Smith asserts that non-profitable spheres for private interest should be taken under the state's guardianship. In modern terms, this refers to mitigating market failures.

From a similar standpoint, John Stuart Mill considered the existence of public goods, asserting that some goods have a special nature that requires constant public control over both their production process and whether they are produced at all. Mill, similar to Smith, also believed that the state should provide goods of public utility; however, he divided the functions of the state into necessary and discretionary ones.

The necessary functions are defined as inseparable from the very idea of government and are performed by all governments with an unconditional character. Among these functions is the production of goods that do not generate private interest in their creation. «When the need arises to provide important services to society», writes the scholar, justifying the limited instances of the necessary presence of the state in the economy, «there is no one who is particularly interested in providing these services, and the performance of these services is not accompanied by a proper reward in the natural or spontaneous course of affairs» [9, p.981]. The argument further adds that the costs of creating public goods cannot be borne by small entrepreneurs or ordinary citizens because they lack the means for implementation, and commercial interest is either entirely absent or practically negligible. Analyzing the above statements, we come to the conclusion that essentially, Adam Smith and John Stuart Mill identified one of the main reasons for the existence of public goods, stemming from the conflict between private and public interests. Importantly, economists of the classical era not only describe the external forms (distinctive features) of such goods but also demonstrate the objective nature of their existence, arising from deep cause-and-effect relationships.

The contradiction between private and public interests as a reason for the existence of public goods forms the basis of A. Pigou's concept. Although the researcher does not explicitly point to this reason and discusses externalities, ultimately, he outlines the picture of a conflict of interests. According to A. Pigou's theory, the production of any kind of goods is influenced by externalities (external effects) that impact the well-being of market participants. Therefore, the state should internalize them—reduce the impact of all negative external effects to the minimum possible level. Pigou believed that creating socially beneficial goods neutralizes the harm caused by some producers pursuing their private interests. The key concept in Pigou's concept is the divergence (gap) between private benefits/costs and public benefit/costs. An example is a factory with a smoking chimney. The factory pollutes the clean air and imposes external costs on others. Pigou considered the tax and subsidy system as a means of influence [10]. Thus, for Adam Smith, John Stuart Mill, and A. Pigou, the existence of public goods arises from the conflict between private and public interests.

Alongside the perspectives on the reasons for the existence of public goods mentioned earlier, there is another approach outlined by ancient philosophers. Ancient Greek philosophers Plato and Aristotle proceeded from the idea that each person has their place in society, determined by their origin, abilities, and physical nature. Therefore, the head of the state and high-ranking aristocrats-officials should determine what goods are necessary for the harmonious development of society. Granting the aristocracy, the authority to manage the provision of public goods, Plato believed that only an educated person (a sage) is capable of understanding what others cannot. The wise ruler creates goods and such an order for society that ordinary people could not even imagine. Thus, Plato's reflections suggest to his followers that there are needs that may arise in a person, but due to their imperfections, they are unable to comprehend them on their own [11].

Aristotle confirms Plato's assumptions about implicit human needs but emphasizes that the state cannot fulfill them without material
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support. Aristotle observes that wealthy citizens are not inclined to spend money on public goods, such as building temples, constructing drainage and sewage systems, shelters, etc. Therefore, the state must compel such individuals to contribute a portion of their income to improve the infrastructure of the state. Since Aristotle's social philosophy is based on the idea of the «middle-class person», he suggests that the satisfaction of people's needs depends on the ruler's tranquility and the readiness of ordinary people to defend the state in case of war [12]. Thus, ancient thinkers derive the essence of public goods from the inability of people to comprehend their needs.

Similar ideas are traced in J. S. Mill's reflections on regular consumption. The author criticizes the lack of intellectual and moral culture, believing that it hinders uneducated people from understanding the value of education and foresight. J. S. Mill writes about physical needs and tastes, stating that these needs are present in every person and are inherently understood by everyone. Comparing base human needs with higher ones, the scholar discovers that only educated intelligentsia in power can realize the importance of implicit needs, such as education. J. S. Mill confirms this with the following statement: «Education is one of those things concerning which, it is not admissible that the people should judge for themselves; but they should be judged for by the government. This is the case in which the interference of government is allowable, if not necessary, by the principles of that liberty of tastes and pursuits which has so often and so emphatically proclaimed» [9, p.961].

R. Musgrave develops the ideas of his predecessors in a more accurate and comprehensive form. He asserts that public goods significantly differ from private goods in that they do not fall within the normative needs of the average consumer. His definition of such goods is as follows: «These are goods and services for which individual demand greatly differs from society's normative goals» [13, p.55]. It is worth noting that Musgrave does not use the term «public good»; instead, he introduces new terms that are very close in meaning: «merit good» and «public finance».

The scholar considers merit goods to be those for which private demand lags behind what society desires, and this demand is stimulated by the government. Thus, the concept of merit goods is linked to the interests of the state as a whole, i.e., those that are not manifested in individual preferences. Prominent examples of merit goods include culture, healthcare, education, and science, all of which contribute to human and personal development. The consumption of these goods not only aligns with the long-term interests of the economic system but is also objectively necessary in the context of globalization [14].

Indeed, a small child is unable to understand why they need to learn the multiplication table or the alphabet because their consciousness is not ready for complex reasoning. Similarly, irresponsible citizens may not comprehend the need for preventive medical examinations or treatment for easily communicable diseases that can affect others. Therefore, addressing the issue of uncovering implicit societal needs is one of the key aspects in the creation of public goods.

The positions of the scholars mentioned above regarding the reasons for the existence of public goods (conflict between private and societal interests, the clash of explicit and implicit needs) allow for the formulation of a more accurate definition. As it appears to us, public goods can be understood as a special product of human activity that possesses explicit or implicit societal utility but does not create opportunities for private gain in its production and exchange.

This definition, unlike existing ones, takes into account the direct causes of the existence of the phenomenon of public goods, rather than merely describing their characteristics. The latter, already as a form of manifestation of essence, enter the scope of research and become a kind of criteria for classifying a good as public or private.

In reality, goods possess various properties, and their combination can also vary. The majority of goods available in the market are private. According to the criteria developed by theorists of the "market failures" concept, such goods have two properties - rivalry in consumption and excludability [15]. Accordingly, goods that do not possess the aforementioned properties, i.e., are non-
rivalrous and non-excludable, belong to the category of pure public goods [2].

Non-rivalry (or non-competitiveness, indivisibility) implies that, unlike the consumption of private goods, public goods can be consumed by all individuals without exception in equal shares without reducing their availability to anyone. Additionally, once introduced, such a good does not disappear from circulation. Describing this property in the language of marginal analysis, it can be asserted that the marginal costs of providing these goods to an additional consumer are zero. In other words, deriving benefit from the consumption of a public good by one consumer does not diminish the possibility of others obtaining it. This leads to a lack of incentive for private producers to supply such goods.

Non-excludability means that the goods are accessible to both those who pay for them and those who use them for free. In markets, there is no mechanism that would prevent the consumption of a public good, as restriction is either impossible or prohibitively expensive. The utility obtained from the consumption of the good by one individual does not exclude others from consuming it, and it does not reduce the availability of the good to others.

Since no one can prevent others from using the good, consumers naturally have the desire to benefit from the public good for free, leading to the problem of «free-riders» and a potential deficit of the public good. Based on these properties, various authors classify clean air, education, national security, literacy levels, control over water supply, street lighting during dark hours, and others as public goods. The assumption is that the government will take on the role of resolving the conflict between private and public interests in the production of such goods.

Later research presented by the theory of public choice has questioned the effectiveness of the government in resolving this problem. According to the main thesis of proponents of this approach, the satisfaction of public interests ultimately translates into the realization of private interests. This is particularly evident during political elections when candidates create certain goods for society to gain advantages in the voting process. This may manifest as a small «bribe» to voters – improving playgrounds, alleys, squares, roads, or in the implementation of more expensive projects – establishing universities, building schools, libraries, hospitals, and other public institutions. In this context, a politician’s interest in providing public goods, both during election campaigns and in the actual performance of political functions, is primarily directed towards realizing their private interests. As a result, society may not receive the necessary goods, often experiencing overproduction of those categories that are beneficial to politicians. Thus, the government is not always an efficient provider of public goods. Simultaneously with this process, in the real economic context, more and more evidence has emerged indicating that the private sector is indeed involved in the profitable production of certain public goods (for example, private schools, hospitals, air transportation, toll roads, etc.). All of this has cast doubt on the exhaustiveness of the criteria previously put forward for public goods and has intensified scientific discussions around this issue.

American scholar W. Nicholson insists that the key feature for classifying a good as public is non-excludability: «A good is public if no one can be excluded from access to it. Public goods may also be non-rivalrous, but it is not necessary», claims the author [16, p.511]. A different position on this issue is taken by P. Samuelson, who considers non-rivalry as the main characteristic [17]. M. Katz, H. Rosen, J. Hirshleifer, A. Glazer H. Gravelle and R. Rees adhere to his views [2, pp. 18–19]. An intermediate position on this issue is taken by J. Stiglitz, who believes that public goods exhibit both criteria but with the caveat that these goods can be classified as «pure» or «impure» [20, p.123].

Supporting this position, many researchers do not deny that public goods can still be produced by the private sector for profit. This applies precisely to «impure» public goods, which can indeed be provided by the private sector, depending on the specific goals of the producer. Therefore, the following conclusion suggests itself: the state produces exclusively pure public goods. All other cases should be considered separately. Modern economic theory today has additional arguments serving as a basis for distinguishing impure public goods: if a good has mixed criteria, then depending on the type of
The presented approaches to classifying goods as public are not exhaustive. Obviously, both club goods and common-pool resources can be classified as either private or public depending on the situation, regardless of whether they are classified as pure public or impure. Let’s explain this with an example. A public library is a public good created by the state. At first glance, it seems to be a pure public good, but the number of books is limited, potentially leading to overcrowding when demand exceeds supply. Similar to club goods, which are non-rivalrous only until the overcrowding effect occurs. Therefore, it is logical that a pure public good, unlike a club good, should be absolutely non-rivalrous and non-excludable. As we see it, additional criteria are needed for a clearer classification, smoothing out questionable moments of assigning goods to one group or another. Using the example of a library, we can derive the first additional criterion – scarcity. Books in limited quantities are a scarce good, even if library books are non-excludable. Any scarce good in the public domain cannot be considered a pure public good because it is potentially competitive. This means that the state should create conditions where goods are in optimal quantities to avoid overcrowding and competition. In reality, scarce goods in the public domain will not be perceived as scarce by consumers until the supply of these goods exceeds public demand.

We understand that material goods, in some sense, are all scarce and competitive. However, to consider them non-competitive and common, they must be at least renewable and reproducible. Here we come to the second additional criterion – theoretically infinite reproducibility. If a resource is limited and difficult to reproduce, such a good cannot be considered a pure public good because sooner or later, there will be competition for the right to possess it. Failure to meet the criterion of reproducibility categorizes goods as impure public goods, and consequently – into the category of scarce goods. For example, a vaccine against a viral disease should be easily obtainable so that there is enough for everyone.
in case of an outbreak. Since one of the primary functions of the state is to protect the population, means of protection should always be available in such quantities that society incurs minimal harm or no harm at all. If the state fails to fulfill its obligation, the emerging need may be met by the market responding to the population’s demands.

Based on the previous criterion, we derive the following – unconditionality of provision. When introduced into circulation, a pure public good cannot be withdrawn from consumption, as is the case with other types of goods. A private entrepreneur who, for example, builds a cinema, which is undoubtedly an impure public good (club good), can do anything with it at any time: close it, sell it, demolish it, etc. A pure public good cannot be removed from consumption. Let's take school education as an example for consideration. The state cannot cease to provide education services to the population because it will have a negative impact on society and its development. An introduced pure public good is always provided unconditionally.

An entrepreneur creates goods, guided by the fundamental market principle of obtaining profit. Typically, a competitive market does not generate an efficiently Pareto-optimal quantity of public goods, so in such cases, a third party must intervene, and it is not always the government. Pure public goods are not interesting for market participants to produce because such activities do not bring profit to the producer-supplier. From this, we can derive the criterion of the absence of explicit benefits. Indeed, it is difficult for the government to derive direct benefits from providing school education or maintaining the police, although it is still possible. Since the goal of provision is not profit, this criterion characterizes exclusively pure public goods.

Also derived from the main criterion of non-excludability is the criterion of absolute right to use. This can be explained by the fact that for any type of goods, except pure public goods, a usage regime can be established: rights can be given or taken away. Being a citizen, a person, regardless of any factors, obtains the right to use a pure public good created by the government. This criterion complements the main one in those impure public goods may have the property of temporary non-excludability and non-rivalry, so they can be incorrectly classified as pure. However, access to the latter is always determined at the legislative level. As a summary of the above, consider Table 1.

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<tr>
<th>Criteria for the Classification of Goods</th>
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<td>Private Goods</td>
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<td>Pure Private Goods</td>
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<td>Competitiveness</td>
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<td>Appropriability (Divisibility)</td>
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<td>Scarcity</td>
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<td>Reproducibility</td>
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<td>Condition of provision</td>
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<td>Possibility of obtaining benefits</td>
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<td>Rights of use</td>
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The provided table allows for distinguishing and correlating goods by categories. The main points of contention in classification are concentrated on the fact that impure types of public goods can be non-excludable and non-rivalrous at some point in time, but this does not make them pure public goods. Since a clear distinction based on two criteria is not possible, five additional criteria
have been used to refine the typology, addressing controversial details.

**Conclusions.** The results of the above study led to the conclusion that conventional notions, shaped by the influence of primitive economism – the market system of supply and demand – do not apply to goods that are meant to be provided for the entire society. Hence, the responsibility for this task falls on the state, which commits to supplying the necessary products of public consumption. Earlier scientific speculations regarding public goods did not delve into the question of its essence, relying solely on observable characteristics. Therefore, the current challenge is to identify the deep interconnections that define public goods and complement previous interpretations of their essence.

During the course of the research, it has been demonstrated that a pure public good is a distinct product of human activity, possessing explicit or implicit societal utility but not generating opportunities for private gain in its production and exchange.

In this definition, the immediate reasons for the existence of the phenomenon of public goods are highlighted, which lie in the contradiction between private and public interests, as well as the conflict between explicit and implicit needs. The properties of public goods, as a manifestation of their essence, are interpreted as distinctive criteria for classifying a good into this category of commodities.

Also, during the study, it was revealed that the two criteria for recognizing and categorizing goods into pure and public goods are not exhaustive. The additional criteria proposed in this work (scarcity, reproducibility, conditions of provision, possibility of obtaining benefits, rights of use) provide the opportunity for a more stringent classification with a lower probability of incorrectly assigning a good to one group or another.

**References**


**Література**

ДО ПИТАННЯ КАТЕГОРІАЛЬНОГО ОФОРМЛЕННЯ ФЕНОМЕНУ СУСПІЛЬНИХ БЛАГ

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Методологія дослідження. Наукові результати, представлені в роботі, отримані за рахунок застосування таких загальнонаукових методів дослідження, як: абстрагування — при встановленні сутності поняття «чисте суспільне благо»; індукція та дедукція — при формуванні критеріїв ідентифікації економічних благ; групування — при створенні удосконаленої класифікації економічних благ; загального й особливого — при розмежуванні чистих та змішаних суспільних благ.

Результати. Під час проведення дослідження отримано висновки відносно того, що традиційні уявлення, які сформувались під впливом примітивного економізму, в центрі якого знаходиться ринок як самодостатня і незалежна сфера від функціонування інших складових суспільної організації, не можуть пояснити існування таких видів благ, якими має забезпечуватися суспільство незалежно від наявності платоспроможного попиту. Це вимагає від економічної науки поступового відходу від неокласичної парадигми досліджень.

Виявлено, що більш ранні наукові розвідки у царині вивчення феномену суспільного блага не торкалися питання його сутності, а відштовхувалися лише від ознак, тому актуальною стає проблема виявлення глибинних взаємозв’язків, які визначають суспільне благо і доповнюють попередні трактування його природи. Визначено категорію «чисте суспільне благо» та показано причини його існування. Виокремлено критерії віднесення блага до класу товарів суспільного призначення та надано удосконалену класифікацію економічних благ. Розглянуто сутнісні відмінності між чистими та змішаними видами приватних та суспільних благ.
Новизна. Надано авторське визначення категорії «чисте суспільне благо», в якому, на відміну від існуючих, актуалізуються безпосередні причини існування феномена суспільних благ. Виокремлено критерії класифікації економічних благ.

Практична значущість. Встановлення сутності поняття «чисті суспільні блага», а також виокремлення додаткових критеріїв дозволяють створити більш точну класифікацію економічних благ з меншою часткою ймовірності неправильного віднесення блага до тієї чи іншої групи. Це слугує підґрунтям для проведення більш ефективної державної політики щодо функціонування суспільного сектора і напрямів його фінансування.

Ключові слова: суспільні блага, клубні блага, загальнодоступні ресурси, критерії класифікації суспільних благ, конфлікт приватних та суспільних інтересів у наданні суспільних благ, явні та неявні потреби.

*Примітка. Стаття є перекладом на англійську мову роботи, опублікованої в «Економічному віснику НГУ» №2, 2017. С. 35 – 42.