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Editorial Words

Dear esteemed readers,

It is my great pleasure to welcome you to the latest edition of ASEJ, the academic journal that brings you the latest research in the fields of law, economics, logistics, finance, psychology, criminology, computer science, and security. This issue features a diverse range of articles from leading experts in these fields, showcasing their latest research and insights into current trends and challenges.

As we continue to face unprecedented challenges and rapidly evolving technological advancements, it is more important than ever to stay up-to-date with the latest research and trends in these fields. This issue of ASEJ offers valuable insights and perspectives that are essential for anyone seeking to stay at the forefront of their respective disciplines.

We would like to take this opportunity to express our sincere gratitude to the authors for their hard work and contributions to the advancement of knowledge. We would also like to acknowledge the invaluable support of the Bielsko-Biala School of Finance and Law for their continued commitment to publishing this journal, which serves as a platform for the exchange of the latest knowledge and insights.

Virtual reality (VR) technology has been advancing at a rapid pace, and with its growth come a range of challenges in various fields, including economics, law, security, and computer science. In the realm of economics, one challenge is determining how to integrate VR technology into existing business models. VR has the potential to revolutionize the way companies conduct business, but it also requires significant investment and infrastructure to do so. Additionally, there are concerns about how VR will impact the job market, as it could potentially eliminate the need for certain types of jobs while creating new ones in the VR industry.

In this issue, we also explore the growing significance of virtual reality in law, economics, finance, and security. As VR technology continues to evolve, it presents both opportunities and challenges in these fields. For example, in economics, VR has the potential to revolutionize the way businesses operate, but it also requires significant investment and infrastructure. In law, the use of VR raises important questions around data protection, privacy, and intellectual property rights. In finance, VR can be used to enhance customer experiences and provide new insights into investment opportunities. In security, VR presents new risks and challenges, such as ensuring the safety of users and protecting sensitive data from cyber threats.

We hope that this issue of ASEJ will prove insightful and informative for our readers, and we look forward to your feedback and contributions in future editions.

Sincerely,

Dr Muhammad Jammal
Editor of the ASEJ, Issue 4, Volume 26, 2022

Municipal waste management in the light of C. Wolf's non-market supply features

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Abstract— Experience from economic crises has shown that there is no ideal mechanism for delivering goods. It turned out that the market and the state are unreliable in certain situations. Contemporary economies are mixed systems, hence the theory of economics tries to answer the question what goods should be provided by the state by means of a non-market mechanism. In the theory of state failure, C. Wolf presented a taxonomy of the characteristics of non-market demand and supply, which can be used to classify a product into a market type or a non-market type. Municipal waste management is an element of environmental protection, which after Poland's accession to the European Union is one of the priorities and most expensive tasks of the state. Delivering goods in this area requires making a decision on the method of their delivery, which is important from the point of view of the effectiveness of spending public funds. It is possible to choose between a market-based and a non-market way of delivering goods. The essence of the problem, which is a consequence of the failure of the market mechanism and the failure of the state, comes down to defining the nature of the good; market or non-market. The aim of the presented article is to check, using C. Wolff's taxonomy, whether municipal waste management is a market or non-market product.

Keywords— C. Wolf's theory, municipal waste management, non-market mechanism, non-market supply.

I. INTRODUCTION

The complexity of the functioning of the economy, reflected in the relations between the state and private entities conducting economic activity, has been occupied by theoreticians and practitioners from various fields for centuries. In economics, many theories and concepts have been created, trying to describe and explain the nature and effects as an inseparable element of these relations for the functioning of the market. Determining the role and scope of the state's participation in the market and the efficiency of the market has become a key issue for economists of all fields of economics. Until the Great Depression of 1929-1933, the view that the market mechanism

ensures the optimal functioning of the economy and society was not much of a controversy. The role of the state, on the other hand, should be to protect the market, because, as Adam Smith has shown, its nature is a self-regulating mechanism, ensuring a balance between the prices of goods, supply and demand, and the income of society. The whole thing is governed by the invisible hand of the market, hence the state, apart from its protection, should absolutely not interfere in the economy. The Great Economic Crisis showed the weakness of the market mechanism through the scale of the decline in production, unemployment, currency devaluation and the impoverishment of the vast majority of societies (Ritzman 1983). It has been widely recognized that only the state has the necessary instruments to put the economy on a growth path and counteract market failure and mitigate its effects. The involvement of the state in the economy, especially after the Second World War, brought very positive results in the countries of Western Europe, North and South America and Asia. Scientific, technical and technological progress in management has resulted in dynamic growth and development of economies, which has translated into the growing prosperity of societies. The 1970s brought a crisis on the oil and gas market, causing the collapse of the economies of developed countries and the emergence of new macroeconomic phenomena, such as stagflation, which resulted in criticism of state interventionism and its economic failure. In addition to the criticism based on classical economic theories, new ones have emerged, postulating the complete withdrawal of the state from the economy or a significant reduction in its share. The essence of the ongoing discussion is to define the area and scope of state activity in the economy that will eliminate or reduce the effects of market mechanism failure (Bator 1958) and to answer the question of what goods should be delivered without the intermediation of the market mechanism (Bochenek 2010). One of the proposals for solving the indicated problem is the theory state failure presented by C. Wolf, in which he defined the



characteristics of non-market demand and non-market supply, i.e., the provision of goods without the mediation of the market mechanism, distinguishing them from the provision of goods via the market mechanism. The aim of the article is to answer the question:

Does municipal waste management have features of non-market supply?

The question is important because municipal waste management is an element of environmental protection, and the environment is a public good whose protection is one of the most important tasks of the state, which means spending public funds. The assessment of spending public funds must be preceded by checking whether municipal waste management has the characteristics of non-market production. Environmental protection, understood very broadly, is also a priority of the European Union policy, which has a significant impact on the functioning of the Member States, resulting from the directives.

The article is divided into five parts. The first part is an introduction, the second part presents the theory of state failure and the characteristics of C. Wolf's non-market demand and supply based on the analysis of the literature on the subject under study. The third part analyzes municipal waste management from the point of view of C. Wolf's taxonomy of non-market supply features. The article ends with conclusions and conclusion.

II. THE CONCEPT OF DEMAND AND SUPPLY OF NON-MARKET PRODUCTS IN C. WOLF'S STATE FAILURE THEORY

The production and distribution of goods in modern economies is carried out by the private (non-public) sector using the market mechanism, and not by the public sector. Economists agree that this form of organization of the economy ensures an efficient allocation of resources. Why, then, is the state necessary in the economy, if the market mechanism ensures efficiency? (Stiglitz 2004) The existence of a state with a well-organized and efficient administration and judiciary is essential for the operation of the market, because it protects property rights and enforces the observance of contracts. These are the attributes of a strong state, without which the market will not function effectively. Another element of an efficient market associated with a strong state is the mutual trust of the parties operating in the market. (Frey 1992) There are also six reasons that make the market inefficient, including (Stiglitz 2004):

- 1) The imperfection of competition.
- 2) The unreliability resulting from the existence of public goods.
- 3) Reliability due to external effects.
- 4) None (incompleteness of certain markets).
- 5) Imperfect information.
- 6) Unemployment and other macroeconomic disruptions.

The reasons listed above cause the market mechanism to fail and justify state intervention and activity in the economy. However, state action in the form of large public programs undertaken after the Great Depression and after World War II turned out to be largely ineffective in the 1970s and 1980s. The

reflection of representatives of science on the ineffectiveness of state actions has resulted in many theories in which JE Stiglitz singles out four main reasons for the systematic failure of the state in achieving its goals (Stiglitz 2004)

- 1) Limited amount of information held by the state.
- 2) Limited state control over the operation of private markets.
- 3) Limited control over bureaucracy (public administration).
- 4) Political Restrictions.

Nowadays, economists basically share the view about the failure of the market mechanism and the failure of the state. Therefore, ways of cooperation between the state and the market are sought, as a result of which they will mutually strengthen each other to the benefit of society. Most countries have a mixed economy where the public and private sectors play an equally important role.

C. Wolf's theory of failure of the non-market mechanism (state failure) is characterized by a different approach to the examined issue than representatives of other theories. C. Wolf considers state failure using the same analytical and conceptual apparatus that is used for market failure. According to C. Wolf, such an approach eliminates the asymmetry in the treatment of market failure and state failure by contemporary economics. The author himself explains that his theory aims to eliminate the asymmetry in the treatment of market and state failures by developing and applying the non-market theory, i.e. state failure, so that the comparison of the operation of markets and states can be more systemic and the choice between them made on the basis of rational premises. C. Wolf also emphasizes the difference between his theory and public choice theory, which is justified by three distinguishing factors (Wolf 1993).

First, the failure of the non-market mechanism is affected by institutional characteristics that are not given much importance in public choice theory or are not taken into account at all.

Second, public choice theory ignores the role of organizational inertia, tradition, and standard operating procedures as contributing factors to the failure of the non-market mechanism.

Third, public choice theory points to other non-market organizations and the reasons for the failure of the non-market mechanism.

The difference in C. Wolf's approach to the problem of the role of the state in the economy is pointed out by B. Dollery, who notes that the theory of state failure reflects the orthodox methodology used in the theory of market failure by striving to determine the types of failure of the non-market mechanism resulting from differences in the basic conditions of supply and demand. Just as some types of incentives can encourage market failures, so too incentives affecting individual non-market actors can lead to behavior and outcomes that deviate from socially preferred ones. Why do certain patterns of failure of the non-market mechanism emerge? C. Wolf replies that the answer lies in the characteristics of demand and supply that distinguish non-market products from market products (Dollery 1994)

C. Wolf identifies five characteristics of non-market demand (Dollery 1994):

- 1) Increased public awareness of market failures.
- 2) The increasing knowledge of society about the unreliability of the market mechanism has led to a decrease in tolerance for market errors and to an increase in expectations for state intervention.
- 3) Politicization of the demand for a specific good.
- 4) The politicization of a selected good by the increased interest of political parties and organizations causes it to be introduced into the political process.
- 5) The Political Benefits of Interventionism.
- 6) Politicians who promote solving problems through state intervention without reference to the cost of implementation are politically rewarded.
- 7) Short time horizon of cost-benefit assessment.
- 8) In a democracy, the term of office determines the time horizon for evaluating the actions of politicians, due to the fact that this time is short, the emphasis is on current, not future costs and benefits.
- 9) Separation between beneficiaries and "payers" of state actions.

The separation between those who receive non-market products and those who bear the costs of their production is, according to C. Wolf, the basic feature of non-market demand. There are two variants of the chapter. The first variant is "micro-sharing", which arises when the benefits of collective action accrue to a specific group and the costs of action are dispersed among all groups. The second variant is "macro-distribution", which arises when the benefits of collective action are shared among all groups, but the costs of the action are borne by a particular group.

C. Wolf identified four characteristics of non-market supply (Wolf 1993):

- 1) The problem of defining the measurement of non-market production.
- 2) Monopoly of non-market production.
- 3) Lack of sufficient social knowledge about technologies used in non-market production.
- 4) No break-even thresholds and no exit mechanisms.

C. Wolf, presenting the theory of state failure, was aware of the necessity of state participation in the economy and intervention in the market mechanism. He argues that the non-market mechanism creates inequalities based on power and privilege, but according to his symmetrical approach, the market mechanism fails to distribute income and wealth (Wolf 1993).

The choice between markets and states in the conduct of economic affairs is one of the cardinal problems of our time, but both aspects involve predictable and serious inefficiencies. Nevertheless, modern economics treats these inefficiencies asymmetrically. This paper attempts to correct this imbalance by developing and applying the theory of non-market state failure so that comparisons between markets and states can be made in a more systematic way. In conclusion C. Wolf states as follows:

The choice between market and non-market systems is ambiguous as real systems are mixed, a combination of state and market, but the relative involvement of each has a major

impact on the efficiency and fairness of economic and social systems.

With regard to static and dynamic efficiency criteria, markets do a much better job than states.

The state can play an important role in improving and expanding the functioning of markets.

Market forces alone can play a significant role in improving the functioning of the state.

The characteristics of non-market supply presented by C. Wolf can be used as criteria for qualifying a good to be supplied by a market or non-market mechanism.

III. MUNICIPAL WASTE MANAGEMENT IN CONDITIONS OF NON-MARKET PRODUCTION

According to the developed approach, spending for public purposes should be considered effective if the society obtains the greatest possible benefits from a certain amount of spending on the set, achieved goals. The society also benefits from the expenses incurred by private entities, thanks to which specific individual and collective needs are met. The benefits to society from the consumption of goods provided by private and public entities depend on the nature of the relationship between the entity providing the supply of goods and the consumer, and the differences between the market and non-market mechanism for supplying goods.

The ultimate goal of spending by private entities (enterprises), as a result of which goods are provided to consumers, is for the owners of enterprises to obtain the greatest possible benefits. Expenses incurred by public entities in connection with the provision of goods should bring the greatest possible benefits to citizens (consumers). The provision of goods through the market mechanism consists in the participation of the company and consumers in the process in which the most important components of the market; demand, supply and prices lead to the establishment of a market equilibrium. The provision of goods, or more often the provision of supply, without the mediation of the market mechanism in the literature on the subject is called *non-market supply*.

The natural environment is a public good whose protection is one of the most important tasks of the state. Municipal waste management as a set of activities undertaken by communes to protect the environment against waste can be considered as an element of state policy implemented to a significant extent by the commune self-government or as an element of local policy. In the first and in the second case, it is an intermediate good used to produce the final good. In both cases, it involves spending public funds, therefore it requires checking whether municipal waste management has the characteristics of non-market production.

C. Wolf pointed out four features distinguishing non-market supply from the supply of goods through the market mechanism (Wolf 1993) the problem of defining the measurement of non-market production, the monopoly of non-market production, the lack of sufficient social knowledge about the technologies used in non-market production, the lack of break-even thresholds and

"exit" mechanisms from production (Kozuń-Cieślak 2010).

1) The problem of defining and measuring non-market production

Non-market production includes mostly intermediate goods that are used to produce final public goods. An example is the legal regulations concerning the functioning and supply of the army and the police, communication and transport licenses, preparation of systemic solutions in the field of education, health protection, environmental protection, distribution of medicines, and crisis management. In each of the mentioned examples, production is carried out excluding the price mechanism, hence it is difficult to estimate to what extent intermediate goods (e.g., military supplies) contribute to the production of specific public final goods (e.g., external security of the state), which are the objectives of social policy - economic. In the practice of national accounts, the value of non-market production is calculated by summing up the value of outlays incurred to produce the product. It is also difficult to assess the quality of non-market production, because there is no feedback from consumers who, in the case of market goods, provide the necessary information to the producer when making decisions about the selection and purchase of a product.

The scale of difficulty in assessing the quality of non-market production varies, depending on the type of product and the possibility of comparing it with analogous or similar products supplied through the market mechanism. It is easy to compare the quality of services provided in the field of municipal waste collection by local government budgetary entities with the quality of services provided by private enterprises, but it is much more difficult to compare the quality of the educational product and medical services provided by public and private entities. The specificity of the public sector is the existence of goods that cannot be compared with similar goods produced by private entities. Regulatory activities of the state, national defence, foreign policy belong to the catalog of goods whose supply is ensured only by the state and no one expects market competition in these areas of activity. The nature of these goods makes it impossible to directly measure the results achieved and the effectiveness of the expenditure incurred. As a consequence, it is also difficult to assess entities implementing the objectives set in the indicated areas, therefore indirect methods of estimating the results as the sum of incurred expenditures are commonly used. However, the growing debt of the public finance sector, especially in highly developed countries, caused a discussion on the need to improve the efficiency of spending public funds and the efficiency of the functioning of the public sector by improving i.a. methods and tools for measuring the value of non-market production. The importance of the problem was noticed by the European Commission, which in 2002 introduced a legal regulation concerning the principles of measuring prices and volumes in national accounts. The regulation, which has been in force in most European Union countries since 2006, prohibits the use of almost all input methods and introduces the obligation to take into account quality differences when evaluating non-market production.

Municipal waste management is an intermediate good used to create the final public good, which is environmental protection. Municipal waste management includes a set of activities in the field of collection, transport, recovery and disposal of waste, including supervision over such activities and over waste disposal sites (Act on waste of 2001), and the strategic objectives of the environmental policy set by the state is the responsibility of the commune. Development of waste management plans, regulations for maintaining cleanliness and order in the commune, adoption of maximum fees for waste collection, development of environmental awareness, collection and development of the required statistical data are carried out without the price mechanism. The effectiveness of funds spent by communes for the indicated purposes is measured using the outlay method. In the literature on the subject, the assessment of the effectiveness of funds spent on municipal waste management is made on the basis of a comparison of expenditure in selected communes.

2) Monopoly of non-market production

Non-market production most often concerns goods provided by public sector entities whose activities are regulated by administration, including the fact that these are legally established monopolies. There is no competition between the entities providing the supply of goods of non-market production based on decisions made on the basis of the assessment of efficiency or quality. The lack of market competition, in particular the lack of possibility to compare the attributes of goods (price, quality, etc.), results in difficulties in assessing the economic efficiency of public entities. Opinions about the low quality of non-market production and the waste of public funds are also common in the society.

Municipal waste management considered as an indirect good, serving to produce the final good produced by the state, has the characteristics of a monopoly of non-market production, because it is provided only by public entities. Municipal waste management is the commune's own task and there are no competing entities producing the product in question. Municipal waste management, considered as an intermediate good supplied to produce a local final good, consists of: partly from products supplied through the market mechanism. In Poland, 55% of waste transport is carried out by private companies, waste landfills are also not exclusively owned by public entities (in the Śląskie Voivodship, 4 out of 32 operating landfills belong to private entities). Residents pay a "junk" fee for the collection and management of waste to the commune, which, pursuant to the Act on maintaining cleanliness and order in the commune, has full authority over municipal waste management in the commune.

3) Lack of unequivocal social knowledge about technologies used in non-market production

One of the fundamental problems of non-market production is the issue of technology (techniques) for the production of public sector goods. Limited possibilities of experimental research, lack of a fast track for withdrawing unsuccessful products, and a long-term process of introducing new solutions

make the technologies (techniques) for the production of many public sector goods obsolete, and in some cases unknown at all. There are no unequivocally recognized as good production technologies, e.g., a health care product or an educational product, it is not known exactly what these products consist of and there is no agreement as to the criteria for measuring their quality. The indicated determinants of non-market production also apply to national defence, one of the most important goods provided by the public sector. In addition, the factor that makes it difficult to assess the effectiveness of national defense production as a product is the limited knowledge on the relationship (production function) between expenditure on individual production components (technical equipment, training, logistical support, supervision, the number of troops, staff, general state of readiness) and the expected final product.

The presented arguments also apply to the natural environment, the condition of which is, among others, a consequence of absolutely ambiguous and insufficient knowledge in the field of municipal waste management.

4) *No break-even thresholds and no exit mechanisms*

Goods produced in the process of non-market production most often do not have break-even points that can be calculated on the basis of cost accounting methods appropriate for market products. There are also no calculable limits to the profitability of public sector entities that ensure the supply of non-market production. Profit and loss account as a criterion for evaluating private entities, in the case of entities the public sector may not be applicable at all. An important feature determining the conditions of operation of entities ensuring the supply of non-market production is the lack of mechanisms for exiting production. It would be hard to imagine that the state suddenly ceases to provide external security because the spending of public funds is ineffective.

The considered feature of non-market production characterizes municipal waste management from the point of view of an intermediate good produced for the production of a state final good. A feature of an indirect local good is the part implemented with the exclusion of the market mechanism, which includes i.e., enacting local law, developing plans and directions of action, liquidation of illegal dumps.

IV. CONCLUSION

Municipal waste management considered as an indirect good serving the production of the final public good (environmental protection) has all the features of non-market production distinguished by C. Wolf, therefore it should be provided by means of a non-market mechanism.

The analysis of municipal waste management carried out in the aspect of producing a local public good allows two features of non-market production to be attributed to it: the problem of defining non-market production and the lack of unambiguous social knowledge about the technologies used in non-market production, hence its provision by means of a non-market mechanism should not raise doubts.

Municipal waste management, considered as an intermediate

good supplied to produce a local final good, does not have the characteristics of a monopoly of non-market production. This is related to the collection (transport) of waste from property owners by private enterprises in some communes. However, the competitiveness effect of this situation is debatable, because the waste transport market was very fragmented, and especially in smaller (rural) communes, the service is provided by small enterprises with little investment potential. Consolidation continues with all its effects, and its leaders are large, capital-strong foreign enterprises that already have a significant position on the market, and this may lead to monopolization or rather oligopolization by means of the market mechanism. (Kozuń- Cieślak 2017) The indicated processes are among those commonly recognized in the literature on the subject as justification for the active role of the state in the market.

The issue of the lack of profitability thresholds and the mechanisms for exiting production is ambiguous, because it is hard to imagine stopping the collection of municipal waste from residents. The commune in accordance with art. 6c section 1 of the Act on maintaining cleanliness and order in communes, it is obliged to organize the collection of municipal waste from property owners. The commune may also, on the basis of Article 6r(2da) of the Act on maintaining cleanliness and order in communes, make additional payments from its own resources to the communal waste management system.

The failure of the market mechanism on the basis of economic theory is a well-recognized phenomenon. The literature on the subject identifies the causes and effects of market failure. The antidote to the failure of the market mechanism was supposed to be state interventionism, with which politicians appropriated an increasing area of economic space. These actions inevitably led to failures of the state (government), because they monopolized the areas of the economy where competition is necessary to achieve economic efficiency and necessary in these areas. The theoretical foundations of state failure were first defined by public choice theory, but C. Wolf's theory of non-market mechanism failure is probably the most comprehensive (Dollery 1994). The most important elements of the theory's versatility include: the symmetry of the approach and methodological consistency with regard to market failure and state failure, as well as the taxonomy of non-market supply and demand characteristics, which allows, being aware of the normative nature of the criteria, to choose the mechanism for delivering the good

The presented characteristics of non-market production are often identified with disadvantages, which are contrasted with the advantages of production supplied through the market mechanism. C. Wolf's taxonomy allows, however, to divide the product into market and non-market. The features distinguishing non-market production from market production developed by C. Wolf should be considered as an element of the specificity of the public sector, which includes the analysis and assessment of the effectiveness of spending public funds.

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