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THE DEBT CRISIS ON UKRAINE'S NATURAL GAS MARKET AND WAYS TO SOLVE IT

The article considers the main reasons that have led to the debt crisis in the natural gas market of Ukraine due to the accumulation of debt from gas supply and gas distribution companies. The purpose of the study is to identify the main prerequisites for the formation of debt in different segments during the reform of the natural gas market through partial implementation of the requirements of European energy legislation.

Having chosen the European vector of development Ukraine is interested in meeting the requirements of European policy within the framework of its international obligations and aspirations for European integration. This necessitates adaptation of the national institutional environment to the basic requirements of the Second and Third energy packages. According to the existing international obligations, the national natural gas market is undergoing significant changes towards liberalization and development of competitive environment. However, in the segment of retail market and supply of natural gas to household consumers for a long time the necessary changes in the institutional environment did not occur or temporary decisions were made, which did not contribute to solving the sector's crisis, but only froze the existing model of relationships between various market participants. Reluctance to implement unpopular solutions in the supply of natural gas to household consumers and attempts to shift the increase in the cost of gas supply tariffs for the needs of the household consumers to other categories of consumers led to a constant redistribution of monopolistic influence and accumulation of significant debt between market participants.

The article analyzes the causes of debt between various participants in the retail segment of the natural gas market, which makes it possible to identify the main factors of such debt. These factors include: the lack of a sufficient level of transparency in the tariff for natural gas supply and transportation services; the absence of a 100% accounting

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for various categories of consumers, which makes it necessary to establish consumption standards, which later become the object of significant abuse; the existing model of public service obligations, which, given the significant redistribution of natural gas, results in significant market distortions; and the imperfect approach to calculating the costs of gas distribution companies in terms of temperature coefficients in the tariff, provided that gas metering exists not in energy units, but in cubic meters. Based on the results obtained in the article, the author sets forwards various recommendations for the implementation of measures, whose main content is to eliminate the institutional prerequisites that lead to the risks of market failures, which may cause debt.

Keywords: *natural gas market, household consumers, gas distribution companies, gas supply companies, arrears*

Presentation of the main research material. The need to increase energy security and the market failures caused by market power abuse by vertically integrated monopolies necessitated the transformation of European gas markets. The adoption of the Second Energy Package [1, 2], aimed at liberalizing economic relations, and later the Third Energy Package [3], which provided for the unbundling property² and strengthening the requirements for competitive conditions, led to significant institutional transformations of European gas markets, which made it possible to form a single European energy space through the integration of national gas markets. Liberalization and ensuring competitive conditions in all segments of the gas market largely determine the changes in the rules of the market and the behavior of its subjects. Transformation of gas markets is designed to ensure the achievement of the main goal of change in energy markets, which is the formation of an efficient market. The very functioning of an efficient market must ensure transparent, fair and economically sound tariff setting. The presence of competitive conditions determines the quality of service provision and increases the variability of the provision of commercial gas supply services according to the needs and preferences of the end user. However, under such conditions, the role of the state is not leveled by the market, on the contrary, the role of state changes. The state will perform important regulatory functions and protect socially vulnerable categories of consumers [4].

Reforming the natural gas market as to natural gas supply to household consumers

Having joined the Energy Community (EU) [5] and subsequently signing an Association Agreement with the EU [6], Ukraine updated its commitments to reform the regulatory framework in line with European rules and standards. By adopting the Law of Ukraine "On the Natural Gas Market" [7], Ukraine implemented the basic requirements of the Second and Third Energy Packages and, according to Article 39 of the Law, implemented a legal separation of economic activity from natural gas

² Unbundling property involves the separation of production and marketing units from natural gas transportation services.



supply from activities related to monopolistic transportation and distribution. However, the separation of activities did not result in a change of ultimate owners, although this is not required by law or international obligations. However, due to the presence of the Public Service Obligation (PSO)³ and the absence of market pricing for households, this led to the preservation of the problems of previous periods in the retail market segment and made it impossible to compete in this segment. The formation of gas monopoly companies (gas distribution companies) was a result of the insufficient reform of the distribution segment of the natural gas market. According to the annual report for 2019 [8] of the National Energy and Utilities Regulatory Commission (NEURC), during 2019 there were 249 suppliers on the natural gas market of Ukraine, among them there were only 37 suppliers, which supplied natural gas to the population on the terms of Public Service Obligation. About 68% of the amounts of natural gas was sold by the supplier "Regional Gas Company" to the population in 2019. The owner has a controlling parcel of shares of 20 operators [9] of gas distribution companies (regional and city gas companies). Although the distribution market share of the Regional Gas Company (RGC) gradually declined in recent years (76% in 2016 and 71% in 2017-2018), it meant a significant concentration of market power, which served as a prerequisite for the emergence of risks of significant distortions and abuses in the market.

Accumulation of debt on the natural gas market

The current crisis of defaults and the growth of debt between different market actors were due to the nature of the long process of reforming the national market according to existing international obligations. Central governments have been procrastinating in implementing the necessary commitments in the gas market or making temporary transitional decisions that did not help to address the crisis in the sector, but only froze the existing model of relations between the various market actors. The lack of political will to implement unpopular decisions and attempts to shift the increase in the cost of gas tariffs for the needs of the population to other categories of consumers led to a constant redistribution of monopolistic influence between different market actors.

Since 2015, the total debt of gas distribution companies, gas supply companies, district heating companies (DHC), electric power companies (EPC), large industrial consumers to the National Joint Stock Company "Naftogaz of Ukraine" and the main transport operator amounted to about UAH 129 billion (Fig. 1) [10].

Debts arose (in the amount of UAH 23.8 billion) from all gas companies that supplied gas to the population on the Public Service Obligation. Regional Gas Companies were no exception and their debt amounted to UAH 12.83 billion. It is extremely difficult to determine the reasons for the formation of such debts, as there

³ Public Service Obligation (PSO), obligations imposed by the central government on market participants to protect the general public interest in the functioning of the natural gas market, in particular to ensure stability, proper quality and availability of natural gas for certain categories of consumers, ensuring socio-economic security, maintaining an appropriate level of security, and ensuring the functioning of socially important facilities.

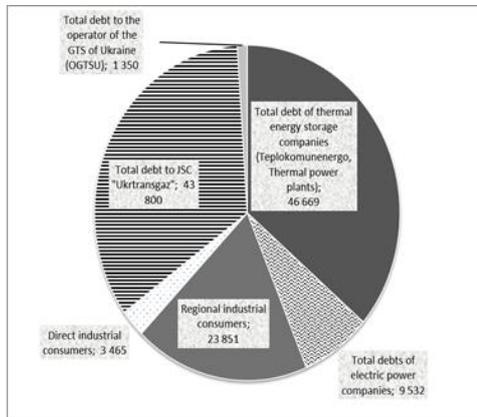


Fig. 1. Total debt to state-owned companies on the natural gas market for the period 2015–2020, UAH million

Source: NJSC "Naftogaz" Ukraine [10].

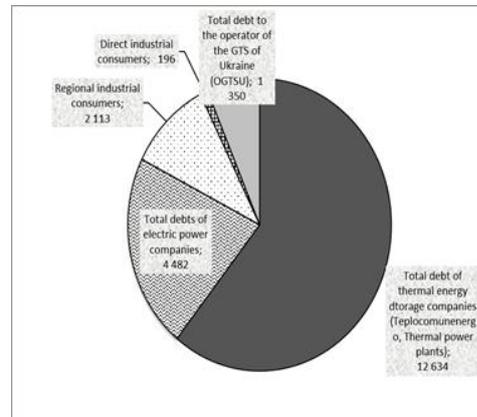


Fig. 2. Debts to state-owned companies on the natural gas market for 2020, UAH million

Source: NJSC "Naftogaz" Ukraine [10].

Debts arose (in the amount of UAH 23.8 billion) from all gas companies that supplied gas to the population on the Public Service Obligation. Regional Gas Companies were no exception and their debt amounted to UAH 12.83 billion. It is extremely difficult to determine the reasons for the formation of such debts, as there are many institutional preconditions that determine the risks of market failures, which lead to the formation of debts between economic companies in the market. However, in the absence of a sufficient level of transparency and openness in this segment of the gas market, there is a misunderstanding as to who actually poorly performs their functions in the market - the state, which does not cover the expenses to suppliers; suppliers who had the opportunity to abuse the rules of gas supply due to the existence of different pricing conditions for different categories of consumers; or the consumers who did not pay enough for gas supply services.

The reasons for debt accumulation in gas supply and gas distribution companies

Gas supply companies stick to the position that the main factors that led to the accumulation of these debts are low consumption rates for consumers without individual natural gas meters and disregard for temperature losses in the supply of gas to household consumers. As early as in 1995, the temporary consumption standards were adopted at 6.8 cubic meters per gas stove with centralized hot water supply, 11.4 cubic meters if there is no centralized hot water supply, and 19.7 cubic meters if there is a gas water heater [11]. In 1996, the consumption standards for the population were revised and increased to 9.8, 18.3, and 23.6 cubic meters, respectively [12].

The investment programs of gas distribution companies, which operated until January 1, 2012, aimed at a 100% provision of homes with meters for consumers who use gas for complex consumption. According to the following investment programs of gas distribution companies, which operated until January 1, 2016, consumers who use gas for cooking and water heating are also almost 100% provided with meters. The biggest difficulties are with consumers who use the smallest amounts of



gas and only for cooking. By January 1, 2021, consumers of this category should be provided with meters according to the latest investment programs of gas distribution companies. If households do not have metering devices by January 1, 2021, then, according to the law "On ensuring the commercial accounting of natural gas" [13], gas supply should be stopped for them. In 2020, about 1.3 million households were not provided with individual gas meters, but taking into account households with tenement gas meters, there are about 800 thousand households that are not provided with individual meters.

The actual consumption of natural gas in everyday life for cooking has changed significantly compared to the mid-1990s. Today a significant amount of natural gas consumption in the kitchen has been replaced by electrical appliances, and therefore it is logical that the consumption standards should be revised. Over the past five years, natural gas consumption standards have changed five times (Table 1). However, every new decree was appealed to the courts and declared "illegal and invalid".

Table 1

Changes in natural gas consumption standards for different types of consumption, 2015–2020

Type of consumption	Measurement unit	Consumption standards				
		06.05.2015–01.02.2016, Resolution of the CMU № 237	01.02.2016 – 19.08.2017, Resolution of the CMU № 203	19.08.2017 – 09.08.2018, Resolution of the CMU № 609	From 09.08.2018, Resolution of the CMU № 63	From 09.08.2018, Resolution of the CMU № 143
Gas stove with centralized hot water supply	per 1 person <i>cubic m</i>	3	4,4	3,3	3,29	3,28
Gas stove without centralized hot water supply	per 1 person <i>cubic m</i>	4,5	7,1	5,4	5,39	5,39
Gas stove and gas water heater	per 1 person <i>cubic m</i>	9	14	10,5	10,49	10,49

Source: [14].

The most adequate way out of this confusing situation with consumption standards would be to conduct research by an independent institution, which would be able to assess the actual consumption norms based on the provided databases of gas supply and gas distribution companies. Similar studies were conducted in 2019 [15] Ukrndiinzproekt based on 18 gas supply companies. Regional Gas Company (RGC) comprises of these gas supply companies. According to the gas supply companies, the results of the study showed a discrepancy between the consumption norms approved by the Cabinet of Ministers and the actual norms, which, according to researchers, should be: for a gas stove with centralized hot water supply - 6.39



cubic meters, for a gas stove without centralized hot water supply - 9.54 cubic meters; for a gas stove with gas water heater - 21.65 cubic meters.

At the same time, studies of similar nature are questioned about their objectivity, because we only consider the data provided by gas supply companies of one commercial group. For example, it would be interesting to compare the provided base of actual consumption with the consumption base of Kirovogradgas, which is controlled by Naftogaz Group. The results of the study contradict the statement of a former member of the National Commission for Regulation of Economic Competition, who claimed that a technical audit was conducted by a German gas company for certain diagnostics in Kyiv on Kyivgaz's licensed territory in the 2000s, which revealed the average gas consumption only for cooking on the stove in the amount of 2.6-2.75 cubic meters [16].

The lack of market pricing for all categories of consumers, the model of special obligations in the market and actual dependence of regional gas supply companies on gas distribution companies caused the lack of interest of gas distribution companies to comply with laws and network development plans to achieve 100% accounting for all categories of consumers. The Law of Ukraine "On ensuring the commercial accounting of natural gas" adopted in 2011 provided that by 2018 all categories of household consumers must have natural gas consumption meters, and the necessary funds for the implementation of this measure should be included in the tariff. Thus, starting from 2016, the structure of tariffs for natural gas distribution services for gas distribution companies provided for funds for the installation of individual natural gas meters, which averaged 5.9% of the planned tariff revenue of gas distribution companies in 2016 (in 2017 - 4.8%, in 2018 - 4.8%, in 2019 - 4.8% and in 2020 - 4.5%, respectively). Taking into account the actual amounts of natural gas distribution services provided from 2016 to 2020, gas distribution companies had funding available for the installation of 10,154,333 individual gas meters. According to the National Energy and Utilities Regulatory Commission (NEURC), based on the results of state control measures, in particular in the control of the actual installation of individual gas meters for the households, NEURC decided to reduce the tariff revenues due to the failure to install individual natural gas meters for the households in the amount of 140993 units.

In order to continue to provide commercial metering gas devices only for cooking and at the expense of the planned tariff sources of gas distribution companies in 2020, the Plans for the development of gas distribution systems for 2020-2029 (investment programs for 2020) were approved, which stipulated the installation of 126730 units of individual gas meters for the households [17]. In order to continue to provide commercial metering devices for natural gas used only for cooking, and at the expense of the planned tariff sources 2020 of gas distribution companies, it was approved 2020-2029 Transmission system development plan (investment programs for 2020), which provides 126730 units of individual gas meters for the population [17].

In 2018, the deadline for the implementation of measures for the installation of metering devices was extended until 2021. The adoption of the Gas Transmission



System Code [18] provided an opportunity to install home meters, which though limited possible abuse due to the lack of account of natural gas consumption by gas distribution companies, but at the same time established mid-range consumption standards for the house in so doing violating other legal acts that determined the consumers' right to individual accounting. However, by the beginning of 2021, all plans to install meters had successfully failed.

Another component of debt formation, according to gas supply companies, is the lack of accounting temperature losses during gas provision. Due to its physical properties, natural gas expands in the warm season and compresses in the cold season. Taking this into account, gas distribution companies believe that the actual consumption of natural gas is different from the meters at different times of the year, so pricing should take into account the so-called temperature coefficients of bringing to standard conditions. However, the attempts by gas supply companies to use temperature coefficients to bring gas amounts to standard conditions, including retrospectively for gas supplies from 2015, were declared illegal by the regulator (NEURC). The National Energy and Utilities Regulatory Commission justifies such a ban by saying that losses "from gas compression" are already included in the tariff as part of production and technical costs (PTC) [19]. At the same time, according to the gas suppliers, the amounts of PTC were last calculated in 2015 and were to be reviewed annually. The Supreme Court of Ukraine should make the final explanation of the legality of the introduction of temperature coefficients and the decision of the National Energy and Utilities Regulatory Commission on the prohibition of such coefficients.

In 2019, the Antimonopoly Committee of Ukraine fined 16 gas distribution companies UAH 278 million for violating the legislation on the protection of economic competition in the form of abuse of monopolistic position and obliged them to carry out recalculation based on the meter data. In its decision, the Antimonopoly Committee of Ukraine imposed a fine on "groups", which include gas supply and gas distribution companies, fairly considering them as a whole [20].

No less debt emerged in the segment of natural gas transportation services, in particular the debts to state-owned companies of the JSC "Ukrtransgaz", which until the end of 2019 performed the functions of the main transport operator, and those of the Ukrainian GTS Operator (OGTSU), which began performing the functions of transport operator in early 2020. The total debt for negative imbalances⁴ of natural gas market actors in 2016–2019 amounted to UAH 43.8 billion. The debt of market actors for balancing services from January 2016 to February 2019 (before the introduction of daily balancing) is UAH 36.6 billion. The bulk of this debt is owed by gas

⁴ Negative imbalance is the difference between the amount of natural gas provided by the customer of transportation services for transportation at the point of entry and that extracted by the customer of transportation services from the gas transmission system at the entry point, which is determined according to the allocation. If the daily imbalance of the customer for gas days is negative, it is considered that the customer of transportation services, based on prior consent given under the contract for the transportation of natural gas, bought natural gas from the Operator in the amount of daily imbalance and must pay the Operator the daily imbalance.

distribution companies (UAH 27.6 billion). Debts of market actors for negative imbalances in March-December 2019 (after the introduction of daily balancing) is 7.2 billion UAH, being 99.9% of this amount owed by gas distribution companies [21]. The debt of market actors to OGTSU for the extracted process gas from the system of main gas pipelines is UAH 1.35 billion in November 2020, out of which UAH 1.09 billion is accounted for by negative imbalances created by gas distribution companies.

The non-payment crisis and formation of preconditions for monopolistic abuse of market power in the retail market were largely caused by the chaotic denationalization of the natural gas distribution market in the 1990s and 2000s. At the same time, there was no state policy for the development of the gas distribution segment and no proper management of the state owned networks to ensure energy security and control over the provision of gas services of adequate quality. As a consequence, 15 gas distribution companies were state-owned in 2019, including one 100% state-owned operator and one with more than 50% shareholding, and 71.54% of JSC Kyivgaz shares were in municipal ownership.

Rising natural gas prices for household consumers at the end of 2020 raised another wave of public outrage and caused a crisis in the market. In order to resolve the situation, the government adopted a decision to return the administrative regulation of the distribution market for the quarantine period. The latter process caused dissatisfaction among gas suppliers and international donors. Returning to the administrative regulation of final prices for household consumers [22], although temporary, is a significant destructive decision in the formation of a competitive natural gas market. At the same time, the crisis in the gas market due to the projected seasonal rise in prices after the abolition of special obligations and the introduction of a competitive retail market in the summer 2020 was due to the existing institutional support and current business conditions.

The recommendations for preventing further accumulation of debt between actors in the natural gas market

The changes in the market require the implementation of systemic measures. Without 100% accounting, it is impossible to create real incentives to change the behavior of natural gas consumption both by end users and by gas supply companies, as the main driving forces of the market (supply and demand) are distorted. The installation of metering devices for 100% of end users will make the issue of determining adequate standards for different categories of natural gas consumption irrelevant.

The existing problem of taking into account temperature losses during gas supply in different seasons should be solved by switching to the European metering model not in cubic meters, but in kilowatt-hours, which is provided by Ukraine's existing international obligations. Accounting for natural gas in energy units does not depend on seasonal fluctuations in ambient temperature, and provides the consumer with the opportunity to pay for natural gas according to its caloric content and quality as an energy resource. Similar changes are provided by the Draft Law No2553 [23], which was adopted in the first reading and provides for the transition to accounting for natural gas in energy units from April 2021.



The state has a set of mechanisms that allow market methods both to influence the market and to perform public functions to ensure consumer protection. The state may set limits on the level of margins of natural gas suppliers. Determining adequate margins for gas suppliers necessitates coordination and discussion with market actors, provides for the need to forecast the activities of economic companies for a predetermined period and eliminates restrictions on access of all market actors to Ukraine's sources of gas extraction. The Antimonopoly Committee of Ukraine should play an equally important role in the functioning of a competitive retail market. It is the mechanisms of regulation of the Antimonopoly Committee that should ensure control over compliance with market rules and prevention of monopolistic abuse of any market actors in the supply of natural gas to household consumers, following the example of market regulation on the petroleum products market. The most effective mechanism for protecting socially vulnerable consumers is the system of subsidies, and monetization of subsidies allows to avoid distortion of market mechanisms.

The problems of debt accumulation in the distribution segment of gas transportation services require, first of all, changes in approaches to tariffing and related processes of mutual settlements between market actors. In this context, the issues of payment of the existing debts are not considered, and the focus is on providing effective mechanisms that would prevent the formation of new debt.

The Article 273 of the Association Agreement provides that "with regard to the transportation of electricity and gas, in particular as regards third party access to infrastructure, the Parties are to adapt their legislation, as referred to in Annex XXVII to the Agreement and the Energy Community Treaty 2005 in order to ensure that all conditions for the transport of electricity and gas are objective, reasonable, transparent and non-discriminatory, aiming to enhance the security of energy supply in the region".

Due to the opportunities for market power abuse, the existing tariff system "costs +" is characterized by a lack of transparency in the formation of cost components. Gas distribution companies constantly state that the existing tariff does not allow them to cover the actual costs, which leads to non-fulfillment of plans for the installation of meters, non-implementation of investment programs, leading to depreciation of networks, increased PTL (production and technological losses) and increased number of accidents, lack of funds for settlements with the transmission network operator on imbalances and a corresponding steady growth of debt. At the same time, gas distribution companies consistently receive some revenue as payments from consumers, and over the past year, the Regulator even raised their tariff. However, gas distribution companies, even in proportion to revenue growth, did not increase the level of payments to the operators of Ukrainian gas transmission system.

In order to solve this problem, the GTS Operator is lobbying taking a decision providing for the introduction of special accounts for gas distribution companies. These decisions would guarantee the targeted use of tariff income received from consumers.

Gas distribution companies have no incentives to increase their energy efficiency with the "cost +" tariff model. Non-transparency of the formation of cost component in the distribution tariff is due to the secrecy of information on the procurements made by the natural gas distribution companies for their own needs (PTC or other



materials / works). Increasing transparency and creating incentives for increasing the efficiency of gas distribution companies would allow changing the tariff-forming model of "costs +" to RAB-regulation (stimulating tariff formation).

RAB regulation is used in most EU countries for operators of gas distribution companies in the electricity and natural gas sectors. This tariff model provides incentives for gas distribution companies to reduce regulatory costs in the networks and to increase energy efficiency, in particular, by reducing the level of PTC in national gas distribution companies to the European average [24]. Incentives to increase energy efficiency are due not only to the regulatory mechanisms of RAB regulation, but also to the fact that the costs saved during the regulatory period remain as a profit for gas distribution companies. The government introduces quality targets, whose monitoring and control allow direct and impartial determination of the efficiency of a gas distribution company in terms of the license conditions. The need to annually increase the efficiency of gas distribution companies may be a prerequisite for the introduction of the white certificate market and, accordingly, be an additional component of state energy policy as to industrial energy efficiency. This set of changes ensures the formation of a favorable investment environment and renewal of the infrastructure of the gas transmission system, which ultimately allows consumers to receive gas supply services of higher quality.

For persistent violators of licensing conditions among gas distribution companies that systematically accumulate significant debt in the gas market, measures should be considered to strengthen control over their activities via the introduction of interim administrations by the Regulator in order to remove the company from the problematic area and stabilize its financial activities.

Conclusions

The introduction of market pricing is a significant step towards the formation of an efficient market in the retail segment for end consumers, and it can provide modern services and reliable gas supply. This is also a direct requirement of Ukraine's international obligations, and therefore the return of administrative pricing is a step backwards, which undermines the confidence in Ukraine and in this country's energy policy. The introduction of market conditions does not guarantee the consumer a low price for natural gas. The main function of market is to provide the market price. At the same time, a liberalized natural gas market guarantees for consumers the right to choose a supplier. In the future, only the achievement of a high level of market competition among suppliers can ensure a reduction in gas prices for consumers. Under these conditions, the government cannot set the final price for natural gas for individual categories of consumers, including socially the unprotected ones. The adoption of interim decisions that contradict Ukraine's international obligations and that preserve the existing institutional problems only leads to a worsening of the market situation regarding the development of competition. The complex nature of the solution of institutional problems in the natural gas market necessitates, first of all, the achievement of 100% metering of consumption of all categories of consumers and the transition to metering in energy units. The introduction of encouraging tariffs for



gas distribution companies will provide incentives to increase energy efficiency in the segment, and boost technological security and infrastructural upgrades. This is also an important prerequisite for the introduction of the white certificate market, which would further contribute to the formation of an energy-saving oriented market. The implementation of these changes will optimize the public finance system and change the consumption behavior of the end users of natural gas via the provision of market mechanisms to encourage the reduction of natural gas consumption and further implement the state policy of monetization of subsidies.

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БОРГОВА КРИЗА НА РИНКУ ПРИРОДНОГО ГАЗУ УКРАЇНИ ТА ШЛЯХИ ЇЇ ВИРІШЕННЯ

Розглянуто основні причини, що зумовили виникнення боргової кризи на ринку природного газу України через накопичення заборгованості у газопостачальних та газорозподільчих підприємств.

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Мета дослідження полягає у виявленні основних передумов до формування заборгованостей на різних сегментах під час реформування ринку природного газу шляхом вибіркової імплементації вимог європейського енергетичного законодавства.

Україна, обравши європейський вектор розвитку, зацікавлена в рамках своїх міжнародних зобов'язань та євроінтеграційних прагнень відповідати вимогам європейської політики. Це зумовлює потребу адаптації національного інституційного середовища до основних вимог Другого та Третього енергетичних пакетів. Відповідно до наявних міжнародних зобов'язань на національному ринку природного газу відбуваються значні зміни у напрямі лібералізації та розвитку конкурентного середовища. Разом із тим у сегменті роздрібного ринку та постачання природного газу побутовим споживачам необхідні зміни інституційного середовища не відбувалися упродовж довгого часу, або ухвалювалися тимчасові рішення, що не сприяли вирішенню кризових проблем сектора, а лише заморожували існуючу модель взаємовідносин між різними суб'єктами ринку. Небажання реалізовувати непопулярні рішення у сфері постачання природного газу побутовим споживачам та намагання перекласти зростання вартості тарифів газопостачання для потреб населення на інші категорії споживачів призводило до постійного перерозподілу монопольного впливу та накопичення значної заборгованості між різними суб'єктами ринку.

У статті проводиться аналіз причин формування заборгованості між різними учасниками на роздрібному сегменті ринку природного газу, що дозволив виявити основні чинники такої заборгованості: відсутність достатнього рівня прозорості у тарифоутворенні на послуги постачання та транспортування природного газу; відсутність 100% обліку для різних категорій споживачів, що обумовлює потребу встановлення норм споживання, які в подальшому стають об'єктом значних зловживань; модель спеціальних обов'язків, яка, з урахуванням значних обсягів перерозподілу природного газу, призводить до значних викривлень на ринку; недосконалий підхід нарахування витрат газорозподільчих підприємств у частині температурних коефіцієнтів у тарифі за умови існування обліку газу не в енергетичних одиницях, а в кубічних метрах. На основі отриманих результатів у статті надаються рекомендації щодо реалізації заходів, головний зміст яких передбачає усунення інституційних передумов, що обумовлюють ризики ринкових провалів, які призводять до формування заборгованості.

Ключові слова: ринок природного газу, побутові споживачі, газорозподільчі підприємства, газопостачальні підприємства, заборгованість