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ENVIRONMENTAL TAXES SHADOWING: THEORETICAL ASPECT

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The ecological disasters caused by deforestation, exploitation of seas and soils, pollution of atmospheric air and water, that are the consequences of an excessive anthropogenic impact on the environment. These and other issues of preservation of biodiversity and the ecosystem in general are on the agenda of international organizations and countries' governments. To compensate for the damage caused to the environment, each country introduced environmental taxes and fees. However, as practice shows, such taxes do not fulfill the functions assigned to them. One of the reasons for the environmental collapses inherent in Ukraine is that there are such mechanisms that allow avoiding (evading) the payment of mandatory environmental payments. In addition to the fact that the size of the environmental payments is not commensurate with the amount of damage caused, the accumulated funds are not used for their intended purpose. Taking this into account, the domestic economy faced the problem of environmental tax shadowing. The primary reason for this is that the amount of environmental tax directly affects the company's profit, and therefore, the business entity may violate environmental legislation for reducing expenses and increasing income, especially when the sanctions for such offenses are not significant. The article confirmed the relevance of the issue of de-shadowing of the environmental tax in Ukraine (by the Publish or Perish instrument focusing on relevant works indexed by the Scopus database), however earlier this issue was reflected in scientific works partially. The normative and legal principles of environmental control were studied, since this tool is intended for the de-shadowing of environmental taxes and fees, as well as for control over the legality of actions performed by state authorities. The successful consequences and shortcomings of the reform of environmental control, which thoroughly began in 2014, were also assessed. Current domestic system of environmental control is not perfect, because of the cases of exceeding the powers of officials in granting permits or concealing environmental crimes. These consequences are the first signs of failure to implement horizontal reforms. The study of sectoral reforms of state environmental control implementation demonstrates that they also have their shortcomings, and this is reflected in the state of the natural environment. Therefore, the analysis confirmed the need for further research on the environmental tax de-shadowing, in order to increase the effectiveness of environmental losses countermeasures.

Keywords: environmental tax, tization of environmental tax, detinization, evasion, avoidance, natural environment.

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Introduction and statement of the problem

Adverse changes in the environment (atmospheric air and water bodies pollution, global

warming, overpopulation, degradation of natural resources, excessive amount of waste, loss of biodiversity, acidification of the ocean, depletion of the ozone layer, etc.) are primarily the consequences

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Environmental taxes shadowing: theoretical aspect

of excessive anthropogenic influence and irresponsible use of subsoil. Failure to act can lead to huge disasters and tragedies. Environmental taxes are one of the compensatory tools for the caused damage. However, even an understanding of the seriousness of environmental problems does not exclude the existence of mechanisms for concealing the real volumes of environmental damage. In the scientific literature, such concealment is called shadowing, which includes avoidance and evasion of environmental taxes and fees. Taking into account the fact that the environmental tax in Ukraine does not fulfill the main functions assigned to it, the level of shadowing is quite significant, and therefore this issue should be considered in detail in order to avoid ways of distorting information in reporting, to counteract the existence of corruption schemes between business entities and state authorities, minimizing any conflicts among legislative documents.

Analysis and research of publications

The problem of shadowing of tax payments by business entities is not a new direction of research both among domestic and foreign scientists. However, this mostly concerns corporate income tax and value-added tax, but a rather limited circle of scientists deals with the shadowing of the environmental tax.

For example, among foreign scientists, only a few consider causality environmental tax shadowing and emphasize the need for state regulation of environmental tax payments and strict control over household compliance with environmental legislation [4,13], while others claim the obligation to promote environmentally responsible business, which will positively affect the de-shadowing of environmental payments [1,6,8]. The analysis of the literature showed that the domestic features of shadowing the environmental tax were not by Ukrainian scientists. However, there are several investigations concerning to the impact of the shadowing of the national economy on the determinants of ecological development [12], to the need to introduce modernized components into the system of environmental taxation [10], to the general aspects of the shadow economy and ways to overcome it [5], etc. So, among Ukrainian scientists the topic of shadowing environmental payments is not sufficiently developed, while the increase in the level of anthropogenic impact in the absence of compensation for the level of damage causes the adoption of operational measures to de-shadow environmental payments.

The purpose of the article

Analysis of the level of research on the subject

of shadowing the environmental tax in Ukraine and the world, to investigate domestic gaps and prospects in the shadowing of the environmental tax, to determine the priority ecological directions that require state intervention.

Presenting main material

The problem of underestimating the actual number of emissions and discharges of polluting substances into the environment is widespread in many countries of the world. The volume of hidden payments depends on the level of the country economic development, income of citizens, the target use of paid taxes, etc.

Publish or Perish software was used to confirm the relevance of the research topic and to determine the statistics of the publication of relevant scientific works. The scientific works of foreign and domestic scientists over the past 51 years, selected by the requests «environmental tax» AND «shadow», «environmental control» AND «shadow» were summarized.

The statistical analysis demonstrates the wide development of this topic in scientific circles, while the high indicators of the specified indices testify to the representativeness of the conducted research. However, we should note that the articles devoted to environmental control and shadowing are more important (table 1). We also note that such an analysis proves the high relevance of the chosen direction of our research, where environmental taxes are subject to shadowing and environmental control is one of the tools to reduce the level of avoidance of paying environmental payments. This proves the necessity of effective functioning of environmental control system.

The conducted analysis also shows that coverage of the issue of environmental taxes shadowing began as early as the 1970s. This is not surprising, because the population's awareness of environmental problems and the real consequences of excessive anthropogenic influence were little covered in the press and discussed by representatives of the authorities. Therefore, households emphasized the unreasonableness of environmental tax rates and tried to hide the real volume of environmental impact by any means. One of the reasons for concealment was the direct impact of the amounts of environmental payments on the final profit of the business entity. Some enterprises created distorted environmental reporting, while others took advantage of conflicts in legislation. Such and many other mechanisms of evasion or avoidance of environmental taxation have forced experts and scientists to research this topic and develop ways of the environmental tax de-

Table 1

Statistics analysis of research concerning «environmental tax» AND «shadow», «environmental control» AND «shadow» over the period 1971-2022 as of 08/10/2022 (among the most cited 1000 studies)

No	Metrics	Environmental tax AND shadow	Environmental control AND shadow
		Keyword	Keyword
1	Papers	997	980
2	Citation	163068	170085
3	Cites per year	3197.41	2049.22
4	Cites per paper	163.56	173.56
5	Author paper	2.09	2.31
6	h- index	184	204
7	g- index	377	406

shadowing.

Thus, for a comprehensive analysis of the research subject, the Scopus scientometric database was used, which covers scientific works in all fields of knowledge. The selection of articles was based on a search query using keywords such as: «avoidance» AND «environmental tax»; «evasion» AND «environmental tax»; «environmental tax» AND «shadow». The search made it possible to form a list of the most relevant works (table 2). So, for example, the Chinese government determined that environmental regulation is an effective mechanism

for de-shadowing of environmental tax payments [13]. However, the more tightly regulated a city is, the higher is the level of corporate evasion/avoidance of environmental payments. This is explained by the fact that strict environmental legislation will not ensure the creation of environmental behavior among enterprises, which will have a positive impact on the environment in the long term, but will only create a punitive effect on business entities, which they will want to minimize in various illegal ways (formation of fictitious reporting, legal procurement sewage treatment plants in case of actual absence of such in

Table 2

Articles on the issue of shading environmental taxes based on the Scopus scientometric database

No	Author (year)	Bibliometry	Number of citations
1	Yu, H., Liao, L., Qu, S., Fang, D., Luo, L., & Xiong, G. (2021) [13]	Environmental regulation and corporate tax avoidance : A quasi- natural experiments study based he china's new environmental protection law. <i>Journal of Environmental Management</i> , 296 doi:10.1016/j.jenvman.2021.113160	21
2	Hu, B., Dong, H., Jiang, P., & Zhu, J. (2020) [4]	Analysis of the applicable rate of environmental tax through different tax rate scenarios in china Sustainability (<i>Switzerland</i>), 12 (10) doi : 10.3390 /su12104233	9
3	Bithas, K. (2006) [1]	The necessity for environmental taxes for the avoidance of environmental thief A note on the paper " environmental responsibility vs taxation ". <i>Ecologic al Economics</i> , 56 (2), 159-161. doi:10.1016/j.ecolecon.2005.11.026	6
4	Sandmo, A. (2002) [11]	Efficient environmental policy with imperfect compliance. <i>Environmental and Resource Economics</i> , 23 (1), 85-103. doi:10.1023/A:1020236324130	44
5	Liu, AA (2013) [7]	Tax evasion and optimal environmental taxes. <i>Journal of Environmental Economics and Management</i> , 66 (3), 656-670. doi:10.1016/j.jeem.2013.06.004	40
6	Bontems, P., & Bourgeon, J. -. (2005) [2]	Optimal environmental taxation and enforcement policy. <i>European Economic Review</i> , 49 (2), 409-435. doi:10.1016/S0014-2921(03)00036-9	23
7	Hamaguchi, Y. (2020) [3]	Dynamic analysis of bribery firms' environmental tax evasion in an emissions trading market. <i>Journal of Macroeconomics</i> , 63 doi:10.1016/j.jmacro.2019.103169 .	7

operation, etc.). Therefore, it was confirmed that strict environmental legislation is not a panacea. It is more important to promote environmentally responsible business and increase the effectiveness of environmental taxes paid by enterprises through their targeted use.

Other scientists emphasize that strengthening tax supervision is the key to reducing corporate emissions [4]. In addition, they believe that the size of the environmental tax has an encouraging effect not only on the minimization of environmental problems, but also on the level of enterprises' pollution in the surrounding territories. We partially share the aboved proposals, and believe that such a system of regulation and taxation is suitable for countries with a high level of income and environmental literacy, while this approach will motivate entrepreneurs in third world countries to underestimate the level of environmental tax payments, because these will have a direct impact on the level of their profit.

It has been confirmed that the more the environmental tax affects the final profit of the firm, the more significant the issue of tax evasion becomes among management personnel [6]. This confirms the need for the functioning of such an environmental policy that would encourage business to be environmentally responsible both for resources and for the environment in general. The fact that the policy of environmental taxation and law enforcement should be optimal and comprehensive is also proven [2]. This will make it impossible to avoid paying environmental taxes (by using legislative conflicts, or the absence of state regulation) and will ensure the existence of accompanying environmental incentives to maintain an optimal level of environmental safety.

Bithas, K. believes that every environmental tax payer contributes to welfare, while the diminution of environmental payments is a kind of theft [1]. The author also emphasizes that economic instruments should be not only punitive, but also stimulating for conducting environmentally responsible business.

Sandmo, A. noted that one of the directions of shadowing the environmental tax is underestimating the amount of emissions and discharges, while the government's task is to create a balance between the amount of environmental damage and fines for violating environmental legislation [11]. The author proves that fines have similar efficiency properties. Liu, AA found that environmental taxes are least likely to be shadowed concerning to gasoline and electricity taxes, whereas a carbon tax has the greatest

avoidance effect [7].

In addition to the falsification of reporting on the real amount of pollutants' emissions, the falsification of real environmental tax amounts can be caused by corruption schemes between entrepreneurs and employees of public authorities [3]. For example, in Ukraine, such high-profile cases as: buying permits for emissions and discharges, bribing employees of control bodies to verify real and actual data on environmental damage, etc., have gained a lot of attention. All these and many other schemes not only increase the level of pollution, but also develop corruption and reduce social welfare.

Therefore, some authors assert the need for the creation and functioning of effective supervision of environmental tax payers and the impossibility of conditions for tax avoidance or evasion. While others assure that the high level of environmental tax evasion directly depends on life satisfaction and tax morale. The authors assure the existence of a close influence of life satisfaction on tax morale through financial satisfaction and institutional trust [8].

Directing the accumulated information to the situation with the environmental taxes shadowing in Ukraine, we will determine that the environmental tax is almost the only tool that serves to protect the environment. While the Report on the results of the audit on the effectiveness of the management and use of environmental payments indicates that during 2015-2017, the state authorities did not create such a system of control over emissions and discharges of pollutants into the natural environment, which would have a positive effect on the level of environmental tax revenues to the budget and the level of anthropogenic impact on the environment. During this period, the main problems of environmental payments shadowing became:

- lack of control over the activity of canceling and reissuing permits for emissions into atmospheric air and discharges into water bodies, which led to the absence of a general list of economic entities that have them;

- the calculation of the indicative parameter of the environmental tax is not based on the volume of emissions of harmful substances into the environment, and therefore the increase in total receipts of environmental payments to the budget occurs at an increase in tax rates;

- lack of established communication between the Ministry of Environmental Protection and Natural Resources of Ukraine, regional state administrations, the State Tax Service of Ukraine and the State Environmental Inspection of Ukraine, which led to the failure to receive significant amounts

of environmental payments from business entities;

- lack of high-quality control and verification work by the tax authorities of environmental tax payers, which affected the low level of additional amounts of such tax;

- the existence of rare cases of non-application of fines for untimely submission of reports and underestimation of environmental tax liabilities (Vinnytsia, Ivano-Frankivsk, Donetsk regions).

It should be noted that certain changes have taken place since 2017, which, according to experts, have had a positive effect on both the amount of environmental payments and the level of environmental awareness of business entities. Thus, in the context of discussing the topic of detinization of the environmental tax de-shadowing, environmental control became a related issue. Environmental control in Ukraine is not only underdeveloped, but also not effective enough, so the governments have always faced the task of reforming the system of environmental control, which will be able to provide compensation for the damage caused to the environment, bring the guilty parties to justice and carry out real protection of the nature.

It should be noted that such reformation began since the time of the declaration of independence of Ukraine, however, in 2014, the environmental control reform set the following tasks:

- to change the purpose of environmental control in the field of environmental protection (from «control over the activities of business entities» to «control over compliance with environmental norms and prevention of environmental damage»)

- change environmental control procedures in the field of environmental protection;

- to create an independent environmental control body (which would not be subordinated to the Ministry of Environmental Protection and Natural Resources of Ukraine);

- to ensure constant monitoring of the state of the natural environment;

- divide the functions of supervision and control;

- to increase the environmental awareness of citizens;

- ensure the inevitability of responsibility for environmental damage in proportion to the level of its occurrence.

At the moment, we see that only a small part of the tasks listed above has been completed, and completed ones do not fully correspond to the previously defined plans. The concept of reforming the system of state supervision (control) should have brought the reform closer to success, but it was not

possible to change the procedure of environmental control in the field of environmental protection, and only the system of bodies was changed. In addition, if the plan was to create territorial environmental control bodies (at the level of the region and oblast), then in fact only interregional ones were created, while some oblast ones were canceled. So we can see that little has changed at the legislative level over the past eight years, while the issue of transparency and effectiveness of environmental control, as one of the tools of environmental payments de-shadowing, has not been paid enough attention at all.

Analyzing the proposed reforms and the successes that have been achieved, it is possible to assert the inaction of state authorities. The current state of affairs in the future will have a negative impact not only on the state of the environment, but also on adverse consequences for the health and life expectancy of the population.

With the arrival of the new government in 2019, a number of changes related to environmental protection were proposed and adopted. Thus, the government implemented a number of horizontal and sectoral environmental reforms, the assessment of which is shown in Fig. 1.

Summarizing the opinion on horizontal reforms, we note that effective measures were not implemented during 2019-2020, and therefore the issue of raising environmental awareness among the Ukrainian population and monitoring the real state of the environment remain on the agenda of our government.

We believe that the priority tasks of the government for the implementation of horizontal reforms are:

- development and implementation of a program for raising environmental awareness (updating environmental morality) of the population;

- adoption of laws and by-laws regarding environmental monitoring and environmental control;

- increasing the amount of administrative and economic sanctions for legal entities for environmental offenses.

As for sectoral reforms, they level out depending on the head of the government, but we note that the new goals correspond to the «Toronto Principles», and the given course and the corresponding adopted draft laws are evidence of the beginning of the fight against the main problems: waste, unauthorized deforestation, excessive extraction of amber, lack of monitoring of greenhouse gas emissions, etc.

In addition, it is worth paying attention to the

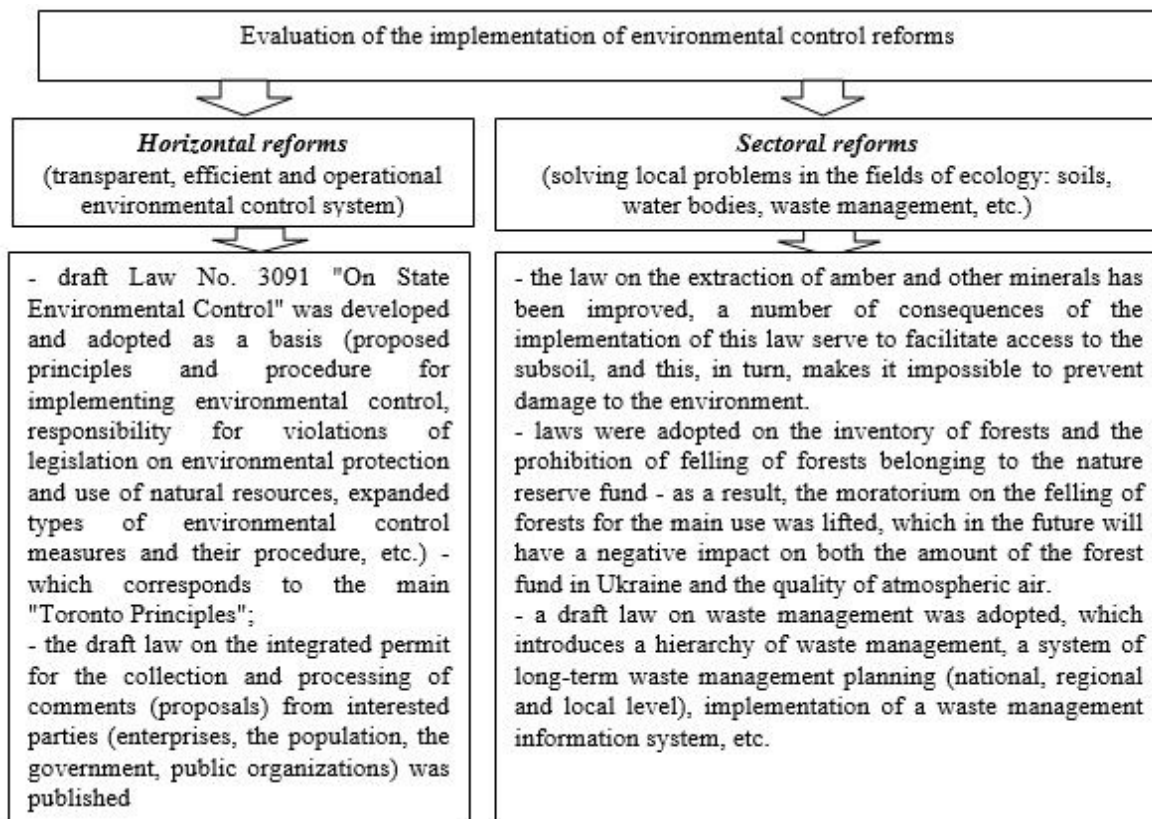


Fig. 1. Evaluation of the implementation of horizontal and sectoral reforms of environmental control

Source: compiled by the authors

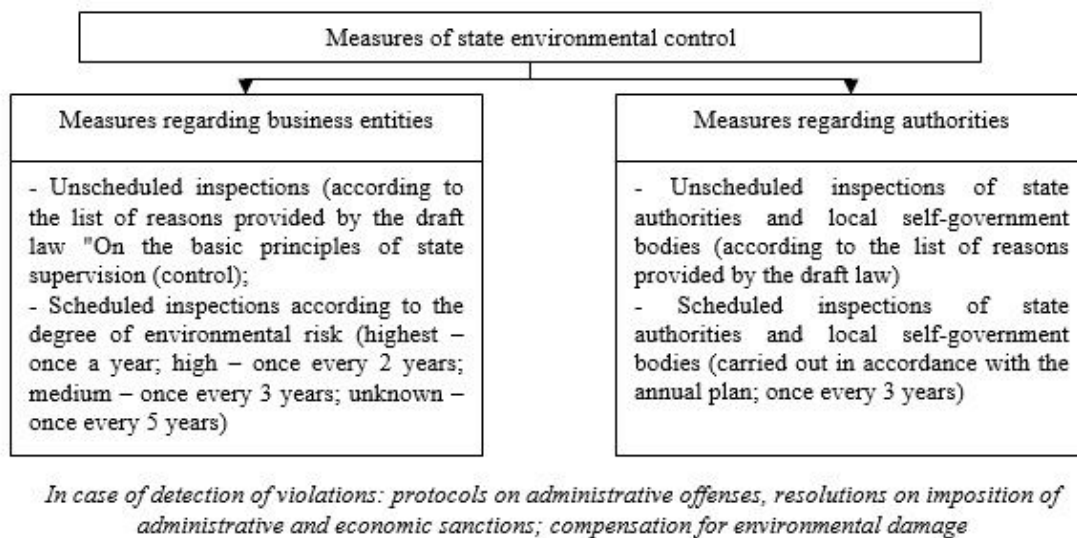


Fig. 2. Characteristics of state environmental control measures

Source: compiled by the authors

measures of state environmental control, because these were somewhat supplemented with the adoption of the new draft law (Fig. 2).

Thus, the main measures of environmental

control are checks that can be applied both to entrepreneurs (direct polluters of the environment) and to state authorities (which must control the real volumes of damage caused with the data presented

in the reports, analyze the appropriateness of extending emission permits and resets, record detected violations, etc.). We note that the implementation of such measures in reality will be characterized by effectiveness and will have a positive effect on tax revenues, however, we should not forget the need to focus considerable efforts on popularizing environmentally responsible lifestyles of the entire population.

We believe that special attention should be paid to:

– avoidance, reduction and control of environmental pollution by industrial enterprises (integrated approach to industrial pollution management, automated monitoring of the amount of industrial emissions and their types, with automatic publication of data);

– waste management (transition to a closed-loop economy, implementation of the goals and objectives of the National Plan and the National Waste Management Strategy until 2030, to expand the producer’s responsibility for such outputs as: electronic purpose, electrical purpose, batteries, packaging waste, etc.);

– biodiversity (reduction in the level of use of chemical pesticides, popularization of organic farming, strict protection of primary and primeval forests, etc.)

Conclusions

The study confirmed the relevance of the problem of shadowing of environmental taxes, where the main ways of avoiding or evading the payment of mandatory payments are: fictitious data submitted in environmental reporting, meager fines for violations of environmental legislation, lack of monitoring of the real amount of damage caused to the environment by a separate business entity and a number of other problems that arose against the background of silencing environmental problems and the inaction of state authorities. We recognize that at the moment the issue of environmental payments de-shadowing receiving more attention, which was confirmed by the statistical analysis (based on the software Publish or Perish) and on the basis of bibliometric analysis of scientific works posted in Scopus. The analysis of the current domestic situation with the de-nationalization of the environmental tax showed that one of the effective tools is environmental control, which has not been successfully reformed since the declaration of independence of Ukraine. At the moment, the government is carrying out a number of horizontal and sectoral reforms, the completion of which will have a positive impact both on the amount of

environmental payments paid (by making it impossible to underestimate the real volumes of emissions and discharges into the environment, the functioning of the monitoring system, increasing the amount of sanctions, etc.) and on the level of anthropogenic impact for the environment, (by the biodiversity conservation, waste management, reduction and control of environmental pollution by industrial enterprises, etc.).

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ТІНІЗАЦІЯ ЕКОЛОГІЧНИХ ПОДАТКІВ: ТЕОРЕТИЧНИЙ АСПЕКТ

Тютюнник І.В., Теницька І.А., Востриков П.М.

Екологічна катастрофа, яка насувається на нашу планету, викликана вирубкою лісів, експлуатацією морів та ґрунтів, забрудненням атмосферного повітря та води, де першопричиною є надмірний антропогенний вплив на довкілля. Ці та інші питання збереження біорізноманіття та екосистеми загалом стоять на порядку денному міжнародних організацій та урядів всіх країн світу. Для компенсації завданої шкоди довікляю кожною країною було запроваджене справляння екологічних податків та зборів, проте, як показує практика, такі податки не виконують покладених на них функцій. Однією із причин екологічних колапсів, притаманних Україні, є те, що існують такі механізми, які дозволяють уникнути або ухилитися від сплати обов’язкових екологічних платежів. Окрім того, що розмір екологічних платежів не є співрозмірним з об’ємами нанесених збитків, так і акумульовані кошти не використовуються за цільовим призначенням. Враховуючи це, вітчизняна економіка зітхнула із проблемою тінізації екологічного податку. Першопричиною цього є те, що суми екологічного податку напряму впливають на прибуток підприємства, а отже при існуванні можливості скоротити видатки та примножити доходи суб’єкт господарювання може порушити екологічне законодавство, тим паче коли санкції за такі правопорушення не є значними. У статті було підтверджено актуальність питання детінізації екологічного податку в Україні (за допомогою програмного засобу *Publish or Perish*, та фокусуєчись на релевантних працях, проіндексованих наукометричною базою *Scopus*), адже раніше це питання відображалось у наукових працях лише дотично. Окрім цього, було досліджено нормативно-правові засади екологічного контролю, оскільки саме цей інструмент покликаний для детінізації екологічних податків та зборів, а також для контролю за правомірністю дій виконуваних державними органами влади. Також було оцінено успішні наслідки та недоліки реформування екологічного контролю, яке ґрунтовно почалося з 2014 року. Станом на сьогоднішній день, вітчизняна система екологічного контролю не є досконалою, адже зустрічаються випадки перевищення повноважень посадових осіб щодо надання дозволів, або приховування екологічних злочинів. Саме ці наслідки є першими ознаками невиконання горизонтальних реформ. Досліджене виконання секторальних реформ державного екологічного контролю демонструє, що вони також мають свої недоліки, а це пропорційно відображається на стані навколишнього природного середовища. Отже, проведений аналіз підтвердив необхідність подальших досліджень щодо детінізації екологічного податку, з метою підвищення ефективності його протидії екологічним втратам.

Ключові слова: екологічний податок, тінізація екологічного податку, детінізація, ухилення, уникнення, навколишнє природне середовище.

ENVIRONMENTAL TAXES SHADOWING: THEORETICAL ASPECT

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The ecological disasters caused by deforestation, exploitation of seas and soils, pollution of atmospheric air and water, that are the consequences of an excessive anthropogenic impact on the environment. These and other issues of preservation of biodiversity and the ecosystem in general are on the agenda of international organizations and countries' governments. To compensate for the damage caused to the environment, each country introduced environmental taxes and fees. However, as practice shows, such taxes do not fulfill the functions assigned to them. One of the reasons for the environmental collapses inherent in Ukraine is that there are such mechanisms that allow avoiding (evading) the payment of mandatory environmental payments. In addition to the fact that the size of the environmental payments is not commensurate with the amount of damage caused, the accumulated funds are not used for their intended purpose. Taking this into account, the domestic economy faced the problem of environmental tax shadowing. The primary reason for this is that the amount of environmental tax directly affects the company's profit, and therefore, the business entity may violate environmental legislation for reducing expenses and increasing income, especially when the sanctions for such offenses are not significant. The article confirmed the relevance of the issue of de-shadowing of the environmental tax in Ukraine (by the Publish or Perish instrument focusing on relevant works indexed by the Scopus database), however earlier this issue was reflected in scientific works partially. The normative and legal principles of environmental control were studied, since this tool is intended for the de-shadowing of environmental taxes and fees, as well as for control over the legality of actions performed by state authorities. The successful consequences and shortcomings of the reform of environmental control, which thoroughly began in 2014, were also assessed. Current domestic system of environmental control is not perfect, because of the cases of exceeding the powers of officials in granting permits or concealing environmental crimes. These consequences are the first signs of failure to implement horizontal reforms. The study of sectoral reforms of state environmental control implementation demonstrates that they also have their shortcomings, and this is reflected in the state of the natural environment. Therefore, the analysis confirmed the need for further research on the environmental tax de-shadowing, in order to increase the effectiveness of environmental losses countermeasures.

Keywords: environmental tax, tinization of environmental tax, detinization, evasion, avoidance, natural environment.

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