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## TAXATION OF THE AGRICULTURAL SECTOR IN THE SYSTEM OF UKRAINE'S ECONOMIC POLICY IMPLEMENTATION AND ITS DIGITALIZATION

**Pavlo Nesenenko**

Candidate of Economics,  
Associate Professor,  
Odesa National Economic University,  
Odesa, Ukraine  
E-mail: nppod@ukr.net  
orcid.org/0000-0001-6399-3511

**Introduction.** The agricultural sector is a strategically important segment for ensuring the country's national security. New challenges rightly require appropriate responses. All means of regulating the state agrarian sector, first of all, should be aimed at ensuring its successful development and effective functioning. The development of the agrarian sector of Ukraine requires the solution of institutional problems of agrarian production. Studying literary sources indicates that state economic policy is implemented, primarily, through the mechanisms of tax policy, which has notes permanent changes in recent years.

**Aim and tasks.** The aim of this article is to research the taxation of the agricultural sector in the system of Ukraine's economic policy implementation and its digitalization. A secondary aim would be to single out the advantages and disadvantages of the taxation system and to create recommendations on choosing a taxation system for subjects of the agrarian sector.

**Results.** The taxation of the agricultural sector in the system of Ukraine's economic policy implementation and its digitalization are researched. Such stages of legal regulation of agricultural protection tax relations as formation (establishment), relative permanence, reformation, and post-reformation (post-reform stage) are defined. The agricultural protection tax measures in terms of VAT taxation during the period are performed. The advantages and disadvantages of the taxation systems of agricultural sector entities are singled out. Recommendations on choosing a taxation system for subjects in the agrarian sector are formed. The structure of the "Manager" module in the program "BAS AGRO. Accounting" is shown.

**Conclusions.** Each of the tax systems that can be used by subjects of the agrarian sector has its own advantages and disadvantages. It is necessary to take into account the conditions under which a specific enterprise operates. The performed analysis of the evolution of the tax legislation in terms of taxation of the agrarian sector indicates a reduction in agro-protective actions by the state. At the stages of formation (establishment) and relative permanence of legal regulation, the introduction and effective use of tax policy, in particular the fixed agricultural tax and the special VAT taxation regime, were observed. During the reform and post-reform stages, the agricultural protection measures outlined above, which were quite powerful and effective at the time, were significantly minimized. The actual adaptation of information technologies to the needs of agriculture is one of the best new technologies in the agricultural sector.

**Keywords:** taxation, tax policy, agricultural sector, digitalization, economic policy.

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## 1. Introduction.

In crisis phenomena, the agricultural sector, which is one of the basic drivers on which the country's economy is based and, at the same time, is a strategically important segment for ensuring the country's national security, continues to demonstrate the appropriate pace of development, but new challenges rightly require appropriate responses (Rybalchenko, Ryzhkov, Ohrimenco, 2021). All means of regulating the state agrarian sector, first of all, should be aimed at ensuring its successful development and effective functioning, on the basis of which is the progressive integration of agro-industry, which is taking place in the current combination of a separate field of agriculture engaged in the production, storage, processing, and sale of agricultural products, as well as service and auxiliary industries to increase the efficiency of agricultural production and the profitability of agricultural enterprises (Malik, Fedienko, 2003; Bagriy, 2004, Popova, 2005).

The priority of the agricultural sector development for economic science is emphasized by Balanyuk (200), Nitsenko (2004). The development of the agrarian sector of Ukraine requires the solution of institutional problems of agrarian production, in particular such as the instability of agrarian policy, improvement of land relations, development of cooperation and integration, increasing the efficiency of management of agrarian production, incompleteness of agrarian reform, state regulation in the agrarian sphere, influence of non-state structures protecting the interests of the system, peasants, price policy (Bondarevska, 2015).

The priority for the agricultural sector's continuous development is state support of subjects, including economic ones, because such characteristics will allow the sustainability of agricultural enterprise reproduction, the production of ecologically acceptable, high-quality products, and the performance of a variety of works and services. Studying literary sources indicates that state economic policy is implemented, primarily, through the mechanisms of tax policy (Klyunok, 2018; Litvin, 2013; Sabluk et al., 2008), which notes permanent changes in recent years.

## 2. Literature review.

The experience of tax reform of the agrarian sector and the practice of regulating relations in the agrarian sphere of other countries of the world community indicate the feasibility of developing and implementing effective state support for the agrarian sector. It is the successful choice of taxation systems by specific agro-industrial enterprises that can significantly hide the development of the agrarian sector in general, which is followed throughout the entire period of the formation of civilization. The importance of the existence of justified taxation and the need to implement its optimal legal mechanisms are emphasized in research Kovalchuk et al. (2021). The taxation of agricultural producers should serve as a means of stimulating the agricultural sector of the economy, an indicator of state support and promote the introduction of innovations, performing fiscal and regulatory functions at the same time.

Dynamic agrarian tax legislation, high variability of tax requirements creates obstacles in ensuring favorable conditions for conducting agricultural activities as the main component of agro-protection measures. It should be noted that taxation affects various spheres of human activity, for example, the employment of the population as well as aspects of companies activity. Feldmann (2011) and Fuest, Peichl, Sieglöcher (2015), in their research test the relationship between corporate taxation and unemployment and confirm this hypothesis. Zirculis and Šarapovas (2017) came to the conclusion that corporate tax rates affect international firm investment choices, which ultimately results in employment changes. Their study used a data set of 41 countries over 11 years in a panel setting. A review of the methods available led them to choose system GMM due to the data set and the inherent endogeneity of the problem at hand. After conducting a slew of robustness checks, they confirmed that the effective average corporate tax rate has had a significant positive impact on unemployment (Zirculis, Šarapovas, 2017).

Tax aspects (for instance differences in tax rates) influence financial decisions of companies belonging to national corporate groups.

Tax factors significantly affect multinational firms' decisions of where to locate debt as well as the proportion of debt that they locate abroad. The proportion of the total amount of debt issued by multinational firms via their foreign subsidiaries increases relative to the tax advantage of debt in the subsidiary's country and also depends on the presence of inter-country withholding taxes on interest income and dividends (Arena, Roper, 2010).

Desai, Foley and Hines (2004) examined the effects of local tax rates and capital market conditions on the amount of borrowing undertaken by foreign subsidiaries. They found that a 10% increase in the local tax rate increases the total debt level of American subsidiaries by 2.8 percent. They concluded that indeed loans are special sensitive to the size of tax rates. The study by Janský (2009) is also worthy of attention. In his work the author made the following conclusion: the effective tax rate differs significantly between EU countries. Many multinational corporations do not pay much tax in many countries: "the larger the multinational enterprise, the lower the effective tax rate". Kluzek and Schmidt-Jessa (2022) put forward research hypothesis related to entities from the Visegrad Group: "The effective tax rate is a significant driver that shapes the capital structure in the case of entities forming part of multinational corporations, while it is insignificant in the case of entities operating within national corporations". Analyzing the issue from the point of view of the importance of the effective tax rate for companies' decisions about how to shape their capital structure, a significant inconsistency of results was noted. The hypothesis was not fully confirmed. But it could not be completely refuted. It was determined that the Effective Tax Rate was a significant variable for Hungarian, Slovakian and Czech MNCs, but it was insignificant from the standpoint of capital structure formation by Polish MNCs. In the countries of the Visegrad Group, for many years, the legal regulation of tax legislation has been properly developed (Kluzek, Schmidt-Jessa, 2022). Thus, taxes, their rates and taxation mechanisms constantly affect the life of society and business. They are an element of state economic policy. The state establishes the taxation system. In particular, in Ukraine, it is defined by the tax code, adopted in

2010 (Avarmaa, Hazak, Männasoo, 2011). It is worth noting that increasing productivity in the agricultural sector, implementing social programs while simultaneously reducing the load on available resources and the surrounding natural environment is primarily facilitated by digital transformation. The digital transformation of agro-industrial production is considered as one of the main ways of diversifying the national economy, its reorientation from the raw material export model to the supply of products with high added value. Reducing costs for the production of agricultural products, increasing their quality and competitiveness based on the effective use of resources and science-based approaches – this is the main task of digitalization of agriculture. The implementation of digitalization in agro-industry is a very progressive and positive trend, but there are problems with its implementation in our country: legal, financial and technical. the lack of a state-wide support program makes digitization unprofitable for agricultural users. In addition, one cannot fail to note the lack of preparation for digitalization in rural areas. The full implementation of decentralization and the adoption of relevant targeted state support programs will significantly speed up the process of digitalization in the agricultural sector.

How fairly Ruiz-Real et al. (2021) remarked "...digital innovation is now important not only for technology-driven companies and IT departments but critical to almost every industry and functional unit". Systematic the digital transformation of a large number of enterprises and types of economic activity can positively affect the achievement of the sustainable development goals (Hinson, Lensink and Mueller, 2019). The formation of an innovative economy should focus on reducing production costs, creating quality, new products, improving human life and raising it to a qualitatively new level (Pavelko et al., 2021). New products in this context include various innovative digitalization tools. The adopted course of active digitalization in our country and the innovative economy should primarily be aimed at meeting the needs of consumers and achieving high standards of quality of life (Osadcha et al., 2020, Ivanchenkova et al., 2019).

### 3. Aim and tasks.

The main aim of this article is to research the taxation of the agricultural sector in the system of the Ukraine's economic policy implementation and its digitalization. A secondary aim would be to single out the advantages and disadvantages of taxation systems of agricultural sector, to create recommendations on choosing a taxation system for subjects of the agrarian sector.

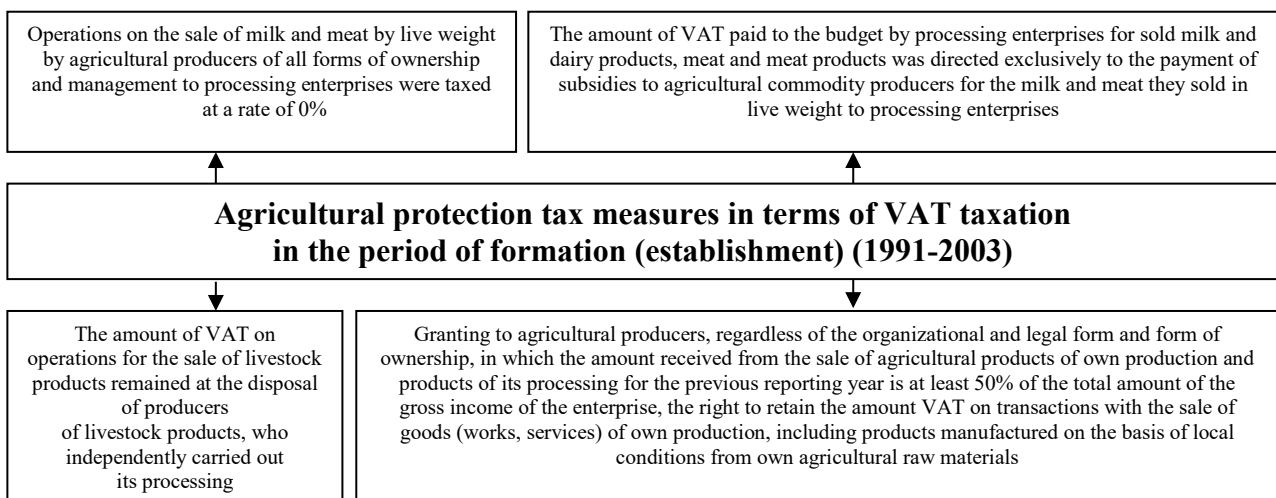
### 4. Results.

General scientific and special methods are used to realize the goal: induction and deduction, dialectical method of cognition, theoretical comparison, the method of system analysis, observation and synthesis. The study of the tax legislation evolution of Ukraine in terms of the regulation of the agrarian sector provides grounds for asserting the existence of such stages of legal regulation of agricultural protection tax relations as: formation (establishment), relative permanence, reformation, post-reformation.

- *Stage of formation (establishment)* (1991–2003) – formation (establishment) of the tax system of Ukraine, adoption of the Law of Ukraine "On the Taxation System" dated 26.06.1991, which excluded producers of agricultural products (collective farms, state farms and cooperatives) from composition of income tax payers.

For a long period of time the taxation of the agricultural sector was characterized by the presence of a special regime, which provided the possibility of choosing a simplified system of taxation and paying a fixed agricultural tax. According to the currently defunct Law of Ukraine "On Fixed Agricultural Tax" No. 320-XIV dated 17.12.1998, the payment of fixed agricultural tax replaced the need to pay 12 other taxes and fees, in particular, corporate income tax, land tax, utility tax, fees for geological exploration works carried out at the expense of the state budget etc. Among the features of a fixed agricultural tax as a measure to protect agriculture, the following are distinguished: cash-in-kind form of payment (such a legal possibility should be viewed positively as a certain level of freedom to choose a convenient payment option); application of increasing coefficients (lowly expressed fiscal meaning); rental character (linking to the normative monetary valuation of the land); temporary nature (it was assumed that the fixed agricultural tax will operate only for five years – until 2004) (Grigorieva, 2020).

With the adoption of the Law of Ukraine "On Value Added Tax" (Verkhovna Rada of Ukraine (1997) the agro-protection system of VAT taxation of agricultural producers was established (Fig. 1).



**Fig. 1. Agricultural protection tax measures in terms of VAT taxation during the period of formation of its legal regulation (1991–2003)**

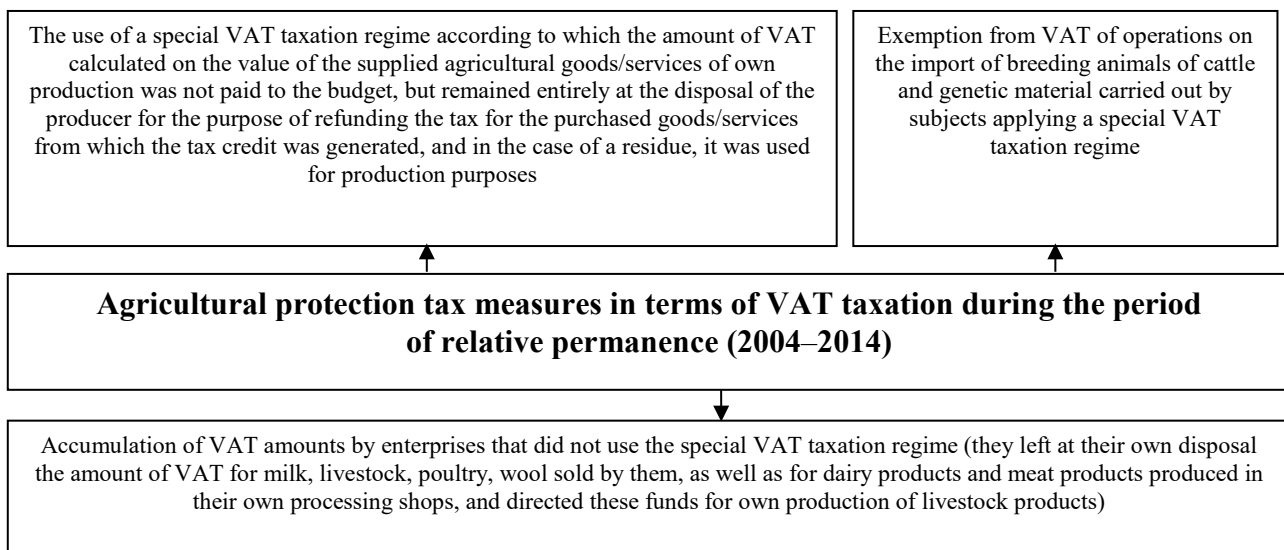
Source: based on Grigorieva (2020).

Each stage of the fish journey (defined in Thereby, the characteristic features of VAT taxation of subjects of the agrarian sector of the economy in the studied period can be considered the targeting of innovations, since they often related to specific producers of certain types of products, and the active manifestation of the stimulating function of the tax system. In terms of land tax taxation, it is appropriate to state that active support for farms was observed during this period, because such newly created business entities were exempted from paying the specified tax for a period of 3 years or even 5 years (concerning settlements with insufficient labor resources). Therefore, the outlined agricultural protection policy of 1991–2003 is a positive experience of domestic tax legislation, which is attracted by the application of optimal tax mechanisms.

- The stage of relative permanence (2004–2014) was initiated by updating the legal basis for providing tax support to agricultural producers, in particular, the current principles of taxation of the fixed agricultural tax were modified (a mechanism for stimulating individuals in the direction of establishing agricultural enterprises was provided, tax rates were reduced) in accordance with the Laws of Ukraine: (Sabluk, et al., 2008).

For ten years, the requirements for taxation of the fixed agricultural tax remained unchanged. Only after the adoption of the Law of Ukraine On Amendments to the Tax Code of Ukraine (2010) (TCU) and Some Legislative Acts of Ukraine on Tax Reform the fixed agricultural tax was included in the unified tax group IV. Until 2015 business entities that were subject to the general taxation system and met the statutory criteria, operating in the agricultural sector, were able to use a special VAT taxation regime in Ukraine.

The introduction of a special VAT taxation regime did not affect the preservation of the legally regulated mechanism for providing subsidies to producers of agricultural products, which functioned as before. Agricultural protection tax measures in terms of VAT taxation in the period of relative permanence (2004–2014) are shown in Figure 2. Thus, the introduction of provisions of the Tax Code of Ukraine (2010) contributed to the introduction of innovations in the area of VAT taxation. At the same time a special VAT taxation regime became the main component of agricultural protection measures which served as a significant lever for the development of the agricultural sector during the period of relative permanence.



**Fig. 2. Agricultural protection tax measures in terms of VAT taxation during the period of relative permanence of its legal regulation (2004–2014).**

Source: based on: Grigorieva (2020); Navalnev (2020).

The reform stage (reformation) (2015–2017) is characterized by the abolition of the fixed agricultural tax in 2015, when the number of taxes in Ukraine was reduced from 22 to 9 items. The fixed agricultural tax in turn, was transformed into a single tax of the fourth group, while its economic structure did not undergo changes, and instead the fiscal pressure was maximum.

The amount of tax payments has increased several times which is caused by the growth of the tax base and the rates of the single tax. At the beginning of 2016 the rates of the single tax were increased again (by 1.8 times). Emphasis should be placed on the differences between budget subsidies and the special VAT taxation regime. The subject of the agricultural sector, which seeks to receive subsidies, is obliged to pay VAT in full, instead, the special VAT taxation regime provided for the withholding of either the entire amount of VAT or a certain part of it.

The amount of budget subsidies is not legally defined, while in accordance with the principles of using the special VAT taxation regime, a rule was used: 100% of VAT remains with the market entity, or a set percentage (15%, 80% or 50%) depending on the amount of transactions carried out by it.

Therefore, it is possible to state the presence of advantages and disadvantages of subsidies in the agricultural sector, however, it is important that the provision of subsidies is not targeted and does not contribute to the development of exclusively large agricultural holdings. This is exactly what Nivjevskyi and Neiter (2020) note: emphasizing that the total volume of subsidies under the program in 2017 amounted to UAH 4 billion, but the subsidy program as a whole has been subjected to devastating criticism. This is a significant advantage of tax support – it is possible to form a stable agro-protective foundation of agricultural activity even in conditions of crisis and lack of funds.

*The post-reform stage* (continues from 2018 to the present) – the Tax Code of Ukraine (2010) has been amended according to which the range of taxpayers of the single tax of the fourth group has been supplemented by natural persons-entrepreneurs who conduct activities exclusively within the boundaries of the farm, subject to the fulfillment of the relevant requirements (Tax Code of Ukraine, 2010). That is, the involvement of individual entrepreneurs in agricultural activities is monitored. According to the Tax Code of Ukraine (2010) the 4th group of single tax payers – agricultural producers include: legal entities, regardless of the organizational and legal form, in which the share of agricultural production for the previous tax (reporting) year is equal to or exceeds 75 percent; natural persons-entrepreneurs who carry out activities exclusively within the boundaries of a farm registered in accordance with the Law of Ukraine "On Farming", subject to the fulfillment of all of the following requirements: carry out exclusively cultivation, fattening of agricultural products, harvesting, catching, processing of such self-grown or fattened products and their sale; conduct business at the place of tax address; do not use the labor of hired persons; members of the farm of such an individual are only members of his family in the definition of the Family Code of Ukraine; the area of agricultural land and/or water fund land owned and/or used by members of the farm is at least 0.5 hectares, but not more than 20 hectares (Tax Code of Ukraine, 2010).

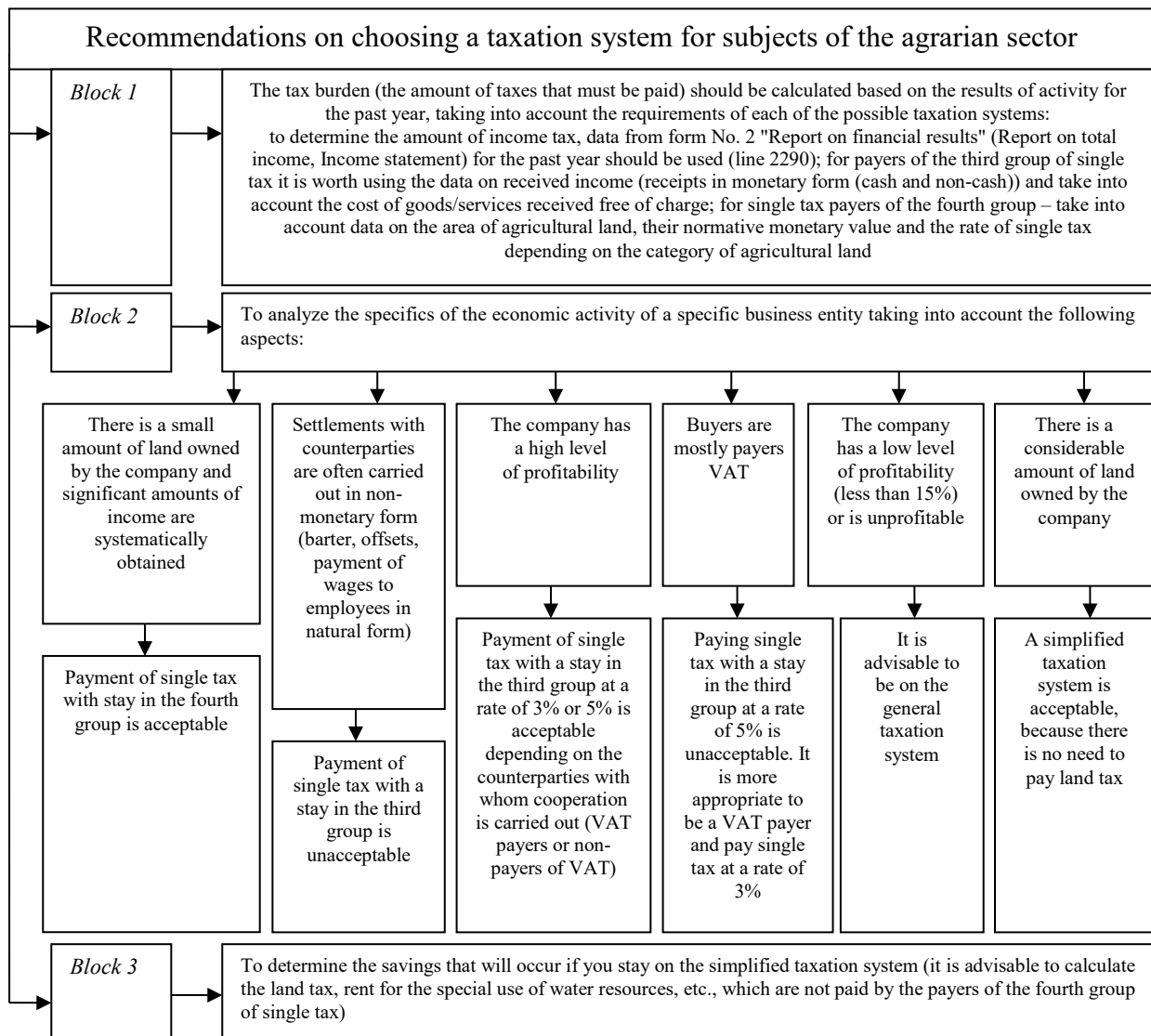
It is possible to ascertain the presence of quite acceptable conditions for the payers of this tax, in particular, regarding the reporting period, tax rates and the foreseen exemption from payment of a number of other taxes. A comparison of different systems of taxation of agrarian sector subjects makes it possible to single out their advantages and disadvantages (Table 1).

**Table 1 . Advantages and disadvantages of taxation systems of agricultural sector entities**

No	Advantages	Disadvantages
<b><i>General system of taxation</i></b>		
1.	The object of taxation is profit determined according to accounting data. The income tax is more objective compared to the single tax. For example, if the year turned out to be unproductive or the cost of agricultural products is higher than the sales price, then the profit may be small and the income tax may also be	Income tax payers are not exempt from paying land tax. This can be a significant obstacle for staying on the general system, because agricultural activity involves the use of agricultural land. Therefore, if a farm owns large areas of land, it will have to pay a large amount of land tax
2.	For income tax payers a reduced personal income tax rate has been established for the payment of dividends to founders – 5% (clause 167.5.2 of the TCU). Single tax payers withhold personal income tax at the rate of 9%	Natural persons who lease agricultural plots of land to agricultural enterprises subject to the general taxation system do not have an exemption from paying land tax
<b><i>Simplified system of taxation with payment of single tax in the third group</i></b>		
1.	Payers of the single tax of the third group have the right to choose the single tax rate and independently decide whether to be VAT payers or not	Single tax payers of the third group are prohibited from conducting barter operations: according to clause 291.6 of the TCU, payments for shipped goods (work performed, services provided) are carried out exclusively in monetary form (cash or non-cash). This ban also applies to promissory note payments for sold goods, offsetting, and payment of wages in kind
2.	Exemption from payment of land tax and VAT (in the case of choosing the single tax rate of 5%)	The amount of single tax does not depend on the results of the activity. When determining the object of taxation, all income in monetary, tangible or intangible form is taken into account, that is, expenses are not taken into account at all. Therefore, if the company receives losses, it will have to pay single tax from all income (revenues).
3.	–	Individuals who lease land to a third-group single tax payer enterprise do not have a land tax exemption
<b><i>Simplified system of taxation with payment of single tax in the fourth group</i></b>		
1.	Single tax payers of the fourth group are exempted from the obligation to calculate, pay and submit reports on income tax, property tax (in terms of land tax), etc., but must pay tax on land plots not used for agricultural production, rent for special use of water resources	The amount of single tax does not depend on the results of the agricultural enterprise (although it can be an advantage for a highly profitable enterprise). That is, if the enterprise received a loss or a small profit, it still has to pay single tax, given the area of land that it owns according to the right of ownership or under the terms of the lease
2.	Natural persons who lease agricultural land to single tax payers of the fourth group are exempt from paying land tax (clause 281.3 of the Code of Criminal Procedure)	
3.	Reporting is submitted only once a year	

Source: based on: Tax Code of Ukraine (2010).

Based on the results of the conducted research we offer the following recommendations for subjects of the agricultural sector which can be taken into account when it is necessary to choose a taxation system (Fig. 3).



**Fig. 3. Recommendations on choosing a taxation system for subjects of the agrarian sector**

It should be noted that increasing productivity in the agricultural sector, implementing social programs while simultaneously reducing the load on available resources and the surrounding natural environment is primarily facilitated by digital transformation. Given the fact that the mechanism of cooperation is not being implemented successfully in our country, since not all farmers work openly, making it impossible to provide transparency of data on economic results, digitalization should be given an importance. The essence of digitization involves the transition of the information field to digital technologies. The world trend today is "Industry 4.0" – the phase of digitalization of the

economy where big data analytics ("BigData") and modern space technologies play a priority role. According to forecasts, the share of the digital economy in the GDP of advanced countries will reach 50-60% by 2030. The main trends in the involvement of modern IT technologies are: the development of precision farming systems using the technologies of global navigation satellite systems and Earth remote sensing systems; unmanned technologies; systems of remote accounting and control of values; intelligent data analysis and scenario modeling; agricultural scouting, which involves the use of mobile applications to monitor the state of land use within a specific field (Löffler, Siegloch, 2021).



One of the key conditions for the implementation of digitization is the training of digital specialists who will enable the digital transformation of agriculture using digital technologies and platform solutions to ensure a technological breakthrough in the agricultural sector and achieve an increase in labor productivity. Despite the discussions about the possible threats of digitization (replacement of the workforce with technologies and artificial intelligence, possible loss of data, etc.) in the domestic agrarian business, digitization in Ukraine is taking place in the following two directions:

- digitization of information, which will gradually lead to the formation of a large array of data, in particular the state agrarian register, geospatial data, seed register, etc. Any relations and services that arise between farmers, farms and the state will be able to take place on the basis of a digital omnichannel platform;

- complete digital transformation of agricultural sector producers, which will allow farmers to no longer depend on printed methods of storing information, conduct all business negotiations online and perform any tasks "without being tied to the office". Our specialists in the IT field are currently working on the development of unmanned tractors, geospatial data processing services, operational decision-making systems, and agricultural production management systems, which are based on the achievements of IT ("DidgitalFarming").

An inventory of agricultural land is carried out with the use of digitization elements, soil density and moisture are determined.

A digital topographic database developed in modern economic conditions will be of great importance for land irrigation and land inventory.

From the micro-level position, namely, as regards producers of the agricultural sector, key decisions are made by them on the basis of data on the activities of economic entities, formed by employees of accounting services as a result of record-keeping and reporting, which can be done manually or with the use of specialized programs. It should be noted that in recent years the program "BAS AGRO. Accounting" is designed to automate accounting and tax accounting. IT solutions developed on the basis of the "BAS Accounting" program are adapted to various segments of activity - crop production, animal husbandry, processing of agricultural products, trade in finished products, provision of services, etc. Configuration "BAS AGRO. Accounting" (edition 2.1) (BAF) makes it possible to maintain accounting and tax records of several business entities (including individual entrepreneurs) in a common information base, which is quite convenient if they cooperate with each other. It is under such circumstances that you can use general lists of finished products, contractors, employees, warehouses (storage places), etc., however, despite the above, regulated reporting should still be prepared separately. The program allows to create a significant number of reporting forms that can be useful to managers at different levels of management. On the "Manager" tab there is an opportunity to generate data in several sections, which allows getting detailed reports (Fig. 4).

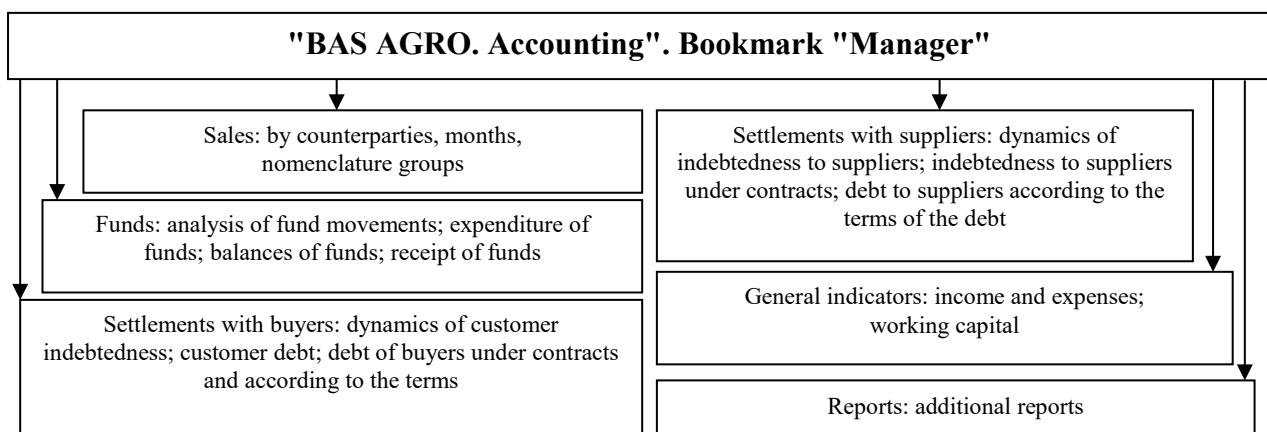


Fig. 4. The structure of the "Manager" module in the program "BAS AGRO. Accounting".

Thus, the head of any market entity working in the agricultural sector using the "Manager" tab in "BAS AGRO. Accounting" can obtain the necessary data for analysis on operational level, even without waiting for the period of preparation of quarterly or annual financial statements, which traditionally serve as its basis. In general, this software product contains advanced opportunities for automation of all spectrums of farming activities including processing and commercial sale of agricultural products, and is a functional solution, as it allows to receive complete, objective and reliable information about the activities of the agricultural sector, which in turn contributes to more effective conducting business.

Consequently, each of the tax systems that can be used by subjects of the agrarian sector has its own advantages and disadvantages. When choosing it, it is necessary, first of all, to take into account the conditions under which a specific enterprise operates, as well as the composition of its property, the availability of land, the amount of income received and the level of profitability.

The performed analysis of the tax legislation evolution in terms of taxation of the agrarian sector indicates a reduction in agro-protective actions by the state. At the stages of formation (establishment) and relative permanence of legal regulation the introduction and effective use of tax policy, in particular the fixed agricultural tax and the special VAT taxation regime, was observed. During the reform and post-reform stages the agricultural protection measures outlined above which were quite powerful and effective at the time were significantly minimized. Therefore, it is possible to assert the insufficient efficiency of taxation of the agrarian sector in today's conditions as a

means of state regulation as a whole. The improvement of tax legislation in the specified context will be facilitated, first of all, by its permanence, which will enable agricultural producers to rebuild their business under the requirements of a simplified taxation system, if such is the most acceptable, to acquire the appropriate qualifications for the correct preparation of tax reports, to receive reliable and objective information in order to analysis of business results, formation of conclusions and proposals for further taxation optimization.

### **5. Conclusions.**

The actual adaptation of information technologies to the needs of agriculture is one of the best new technologies in the agricultural sector (next to such as: GPS agriculture; the possibility of using satellite data; drones and other aerial photographs; merging databases). Subjects of the agricultural sector traditionally receive significant benefits from information technologies that are permanently developing, and their business under such conditions becomes profitable, transparent and financially sustainable. Thus, subjects of the agrarian sector, provided they choose an acceptable taxation system and use modern IT solutions developed on the basis of the "BAS AGRO. Accounting" program, which are adapted to different segments of activity – crop production, animal husbandry, processing of agricultural products, etc., are able to manage effectively, making decisions based on reliable, objective and transparent data, replenishing the state treasury and promoting the development of business. Without the use of digital technologies and the introduction of an adequate scope of taxation systems activity, it is impossible to form strategic alternatives for its development.

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