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- creation of an in-demand information platform to make public the results of studying socio-economic and other consequences of taxation reforms and analysis of expected effects from various tax transformations;
- increase of scientific and theoretical knowledge in the field of taxes and taxation as a science aimed at searching new constructive solutions in the taxation sphere;
- development of a package of measures of practical, organizational and legal, information character increasing efficiency and justness of taxation and tax transformations;
- comprehensive international cooperation of representatives of scientific community, public, business and various governmental bodies in improving the taxation system.

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- comprehensive and complex analysis of international and domestic experience of reforming national taxation systems;
- development of constructive measures on topical issues of counteraction and tax evasion prevention;
- support of the inter-disciplinary approach to studying such hardest phenomena as taxation and tax reforms;
- cooperation of scholars of various sciences (economics, mathematics, law, sociology and psychology) in the process of improving national taxation systems.

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THE INFLUENCE OF ELECTRONIC INVOICE ON TAX COLLECTION AND TAX REFORM IN CHINA

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ABSTRACT

Popularization and application of electronic invoice are closely related to the development of global e-commerce and the advent of the digital economy era. The article explores the use of electronic invoice in European Union and China's Taiwan region and China. The research perspectives of electronic invoices in China and other countries are diverse. These studies have certain forward-looking and systematic character, and put forward a lot of suggestions and measures for the application and management of electronic invoice. Most of the related research ignore the interdependence of the relevant theory and practical promotion of electronic invoice, and the impact of electronic invoices on tax collection and tax reform. The analysis of the influence of electronic invoices on tax collection demonstrated that electronic invoice helps to strengthen the taxation in the field of e-commerce; saving costs and boosting environmental protection; improves the efficiency of tax collection and management, and speeds up informatization of government management. Although the promotion and application of electronic invoice in China has achieved some success, there are still some problems, such as the lack of in-depth understanding of electronic invoice, there are problems of reimbursement in the process of printing of electronic invoice, there is a gap between the application of electronic invoice and the current management model of electronic invoice which is a copy of the traditional model of paper invoice. These questions are worth a further discussion and analysis

KEYWORDS

Electronic invoice, tax collection, tax reform, China's tax system, digital economy

HIGHLIGHTS

1. The promotion of electronic invoice is an important measure to implement "Internet plus Taxation"
2. Electronic invoice will lay a solid foundation for the China's digital economy tax reform
3. In short term, the development of electronic invoice results in a double-track system which shows that China's electronic invoice and paper invoices coexist
4. In the long run, the development of electronic invoice forced China's tax reform and leads to the reconstruction of the current paper invoice system of China

ВЛИЯНИЕ ЭЛЕКТРОННЫХ СЧЕТОВ-ФАКТУР НА НАЛОГОВОЕ АДМИНИСТРИРОВАНИЕ И НАЛОГОВЫЕ РЕФОРМЫ В КИТАЕ

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АННОТАЦИЯ

Внедрение и популяризация электронных счетов-фактур тесно связана с развитием глобальной электронной коммерции и наступлением эры цифровой экономики. В статье проанализирован опыт использования электронных счетов-фактур в Европейском Союзе, Китайской провинции Тайвань и Китае. Исследования применения электронных счетов-фактур в Китае имеют определенные отличия от других стран, в них систематизируется существующий опыт, предлагаются различные решения и меры для внедрения и управления электронными счетами-фактурами. Однако большинство исследований не затрагивают взаимосвязь теоретических и практических аспектов применения электронных счетов-фактур и их влияние на сбор налогов и налоговые реформы. Проведенный в статье анализ влияния электронных счетов-фактур на сбор налогов показал, что они способствуют улучшению налогообложения в сфере электронной коммерции, снижают издержки и помогают сохранить окружающую среду, повышают эффективность сбора налогов и налогового администрирования, а также ускоряют процесс информатизации государственного управления. Развитие электронных счетов-фактур в Китае поможет решить проблемы в сборе налогов и управления налогообложением в информационной среде, также будет способствовать: снижению издержек налогового администрирования, усилению налогообложения электронной коммерции, развитию налоговых реформ в Китае в соответствии с требованиями эпохи цифровой экономики. Несмотря на то, что внедрение электронных счетов-фактур в Китае достигло определенных успехов, в этой сфере остаются нерешенные проблемы. К этим проблемам относятся: отсутствие глубокого понимания сущности электронных счетов-фактур; проблема возникновения дополнительных издержек при необходимости печати электронных счетов-фактур покупателями; разрыв между применением электронных счетов-фактур и существующей моделью управления налоговой информацией, которая копирует модель управления бумажными счетами-фактурами. Данные вопросы требуют дальнейшего изучения и обсуждения

КЛЮЧЕВЫЕ СЛОВА

Электронные счета-фактуры, налоговое администрирование, налоговые реформы, налоговая система Китая, цифровая экономика

ОСНОВНЫЕ ПОЛОЖЕНИЯ

1. Применение электронных счетов-фактур является важным этапом внедрения «Налогообложения Интернет+»
2. Электронные счета-фактуры послужат основой реформирования налоговой системы Китая в условиях цифровой экономики
3. В краткосрочной перспективе неизбежно длительное сосуществование электронных и бумажных счетов-фактур
4. В долгосрочной перспективе развитие системы электронных счетов-фактур ускорит налоговые реформы в Китае и изменит существующую систему бумажных счетов-фактур

Introduction

With the mushroom growth of information technology and the Internet, and the vigorous rise of e-commerce in China, construction of China's information society has entered a new stage. Paperless, electronic technology has become the development trend of social and economic life. Invoice is an important part in the economic life in China. The traditional paper invoices due to their own limitations is not consistent with the development trend of tax information and social information. In 2009, China began to pilot the network invoice, and then gradually launched the promotion of electronic invoices. Electronic invoice is the product of the development of information technology and Internet, and is an important part of the tax information construction in China.

Electronic invoices have been launched in several provinces in China. At present, some achievements have been achieved. In the future, electronic invoices will have some impact on tax collection and tax system reform in China. But there are some urgent problems to be solved.

Literature review

Sorting out the research topics related to electronic invoices in China and other countries in recent years. The main focus is on the following fields.

Argument on the necessity of carrying out electronic invoice. Zhong Fasheng [1] believes that with the popularity of smart phones and mobile Internet and other terminal devices, the application and promotion of electronic invoices are indispensable. First, it saves the cost of tax administration and enterprise management. Such as China Telecom saves 2300 tons of paper every year after the implementation of electronic invoice, and it saves related expenses more than 400 million. Second, the office efficiency of tax authorities and ticket companies has been greatly improved.

Sun Rongzhou, Fu Yangfan and Liu Musheng [2] believes that the application of electronic invoices can improve the efficiency of tax departments, and timely

grasp the taxpayer's invoice use, whereabouts and related details. It is conducive to consumer rights protection, to prevent and eliminate invoices forgery, reduce the frequency of illegal cases of tax evasion, reduce the occupation and waste of state human resources.

Yu Dan [3] thinks that an effective invoice system is not to participate in the economic transaction by "controlling ticket", but the design of a monitoring mechanism to overcome false behavior, tax evasion in the transaction.

With the advent of the information age and the progress of Internet technology, electronic invoices have been born, and the promotion and application of electronic invoices have an irreplaceable impact on e-commerce, modern services and other industries. So, the promotion of electronic invoices can adapt to the future development of society, electronic invoices gradually replace ordinary invoices is an inevitable trend.

Research on the obstacles of electronic invoice management. Shao Lu [4] put forward to the following obstacles of electronic invoice management in the process of promotion, from the perspective of management change. First, the accounting system and the file management system mainly aim at the paper invoice and deviate from the original intention of the electronic invoice, which does not conform to the promotion of the electronic invoice. Second, the authenticity audit standard of electronic invoices is different from the traditional paper invoice identification. Several times of downloading, printing and copying can not guarantee the uniqueness of invoice reimbursement.

Cao Jing [5] thinks that the old invoice management channel restricts the operation platform of the emerging electronic invoices, which is the most important obstacle in the process of electronic invoice operation.

Rapid development of electronic commerce and continuous optimization of science and technology. The traditional paper invoice is gradually decoupled from the modern market. This requires the

gradual promotion of electronic invoices to meet the needs of the times, there are many obstacles in the process, it is urgent to further strengthen management to ensure the orderly promotion and operation of electronic invoices.

Research on improving the management of electronic invoices. Li Ping (2016) [6] put forward the concrete measures of China's invoice management. First, speed up the legislative process of electronic invoices and system construction. Second, unify and standardize the national electronic invoice standard. Third, avoid bundling special equipment, reduce the burden on taxpayers. Fourth, build electronic invoice security system, prevent virus invasion and malicious attack.

M. Lagzian and N. Naderi [7] points out that in the process of invoice electrification, social benefit and operation effect should be paid more attention. Such as Singapore government sends electronic invoices to all operators, in order to realize the full coverage of electronic invoices in the transaction process. Singapore electronic invoices mainly through the client and online issued two models, respectively for large volume of commercial enterprises and small and medium-sized enterprises.

A. Cuylen, L. Kosch and M. H. Bretnier [8] proposes that the digitization of invoice process provides a good opportunity for enterprises to reduce expenses, optimize management tasks, and improve efficiency and competitiveness. The European Commission has implemented the draft directive on public procurement of electronic invoices. The electronic invoice information will be sent to the taxpayer and the ticket holder by means of SMS. The relevant data are uploaded to the electronic invoice system. At present, the electronic invoice process is basically consistent to meet the needs of different countries.

The above scholars' suggestions, from different angles, different perspectives, have a certain reference. In the process of operation, electronic invoices should focus on legislative protection, and solve the menace from the rear.

In summary, the research perspectives of electronic invoices in China and other countries are diverse. These studies have certain forward-looking and systematic, and put forward a lot of suggestion and measures for the application and management of electronic invoice. But there are some shortcomings. First, most of the related research focus on certain aspects, such as electronic invoice operation, problems and improvement measures and so on, but ignores the complete comb about relevant theory and the practical promotion of electronic invoice. Secondly, these studies tend to make a statement in the experience of electronic invoice management, ignoring the effect of electronic invoice operation, especially the impact of electronic invoices on tax collection and tax reform.

The connotation of electronic invoice and its development in other countries

The definition of electronic invoice.

Electronic invoice has been gradually promoted, with the development of information technology, networking and e-commerce. Because of its short history of development, there is no uniform definition of electronic invoices. However, several representative concepts can be sorted out. So we can have a general understanding about the characteristics and attributes of electronic invoice.

According to the definition of the European Union on electronic invoice, electronic invoice is a data set, which lists all of the items sold by the provider, that is transmitted to the buyer via the electronic data interchange, and that includes all agreed details of the transaction by both parties.

According to the definition of the Ministry of Finance Department of Taiwan in China, electronic invoice is a document which is issued by a business enterprise with the computer, and transmitted over the internet [9].

However, Chinese scholars generally think that electronic invoice is a kind of certificate, but it is stored through electronic format. Such as Tao Zhaohua (2013)

pointed out that the electronic invoice is a kind of certificate which exists in the form of electronic data message [10]. Cai Lei believes that electronic invoice is a receipt and payment voucher, which is stored through electronic format, and which is issued in the process of buying and selling goods, providing labor services or accepting labor services, or engaging in other business activities [11].

From another point of view, the electronic invoice is an electronic image of paper invoices, is a string of electronic records. Although the basic attribute of electronic invoices as a voucher is the same as the paper invoices, there are still some differences in the invoice issue, storage, query, and other aspects.

The development of the electronic invoice in other countries. To promote the development of electronic invoice, European Union and China's Taiwan region have improved the policy and legal environment for the use of electronic invoice. Such as the introduction of relevant policies and regulations, the establishment of special government organizations and so on.

As early as 2001, the European Union began to design the system of electronic invoice. In December 2001, the European Union passed the relevant act on increasing the efficiency of VAT invoice system, and acknowledged the validity of electronic invoices. In 2003, the European Union issued the guidelines for electronic invoices, which clearly defined the unified format, content, procedure and place and method of electronic invoice [12]. Since 2005, some countries in European Union have actively promoted relevant legislation to ensure the promotion and use of electronic invoices. Most of the countries in the European Union to promote electronic invoicing is starting from the large enterprises. In addition, the government public procurement field is strictly incorporated into the scope of the use of electronic invoices [13; 14].

From the current laws and policies about electronic invoice, the main contents of the electronic invoice system of EU include the following [12; 15]. First,

electronic invoice has the same status with paper invoices in law. Second, according to the latest EU electronic invoice regulations, all invoices, whether paper invoice or electronic invoice, must include data that meets the minimum requirements for electronic invoice. But what are the specific minimum standards, different countries have different interpretations. Third, the electronic invoice should be able to control the business of the enterprise. Fourth, the electronic invoice must ensure the authenticity of the source and the integrity of the content. Fifth, the electronic invoice must be archived in its original state. Sixth, all supporting documents for electronic invoice must be stored in the same place as the electronic invoice.

China's Taiwan region is also one of the early implementation of electronic invoice. From 2000, in the field of e-commerce, paper invoices are no longer be sent, but the uniform use of electronic invoices. In 2010, electronic invoice was extended from online transactions to offline transactions. Electronic invoice in Taiwan run through a specific mode. In this mode, "integrated service platform" and "value-added service center" together to provide the creation, transmission and reception of electronic invoice for taxpayers. "Integrated service platform" is established by the Taiwan "Ministry of finance". "Add value service center" is set up by the enterprise or the third party institution. In Taiwan, electronic invoice is issued through buyer's value added service center, seller's value added service center or independent third party value added service center [16; 17]. No matter what kind of way, all the data are required to send to the "integrated service platform" for unified integration. Value added service center can help businesses to open invoices, and also responsible for the management of electronic invoice, and docking with "integrated service platform". The functions of "integrated service platform", includes invoice deposit, tax services, cross network integration, data exchange, statistical analysis and so on.

The development of electronic invoice in China and its development orientation

Development process of electronic invoice in China. In February 2013, the State Administration of Taxation issued the “measures for the administration of network invoices”, and pointed out that if the conditions permit, the electronic invoices can be tried out.

In June 2013, “the announcement of pilot several matters about electronic invoice application” was issued in Beijing. Since June 27, 2013, the application of electronic invoices pilot was carried out in Beijing. On the same day, Beijing’s first electronic invoice was born in Jingdong mall website. This is also the first electronic invoice in the field of e-commerce in China.

In December 2014, Beijing’s first electronic invoice in the field of financial insurance was issued by China Life Insurance Company. The use of electronic invoices were expand from online to offline. This is an important step in the development of electronic invoice. Electronic invoices will be extended to more industries and fields. So it will play a greater social and economic effects.

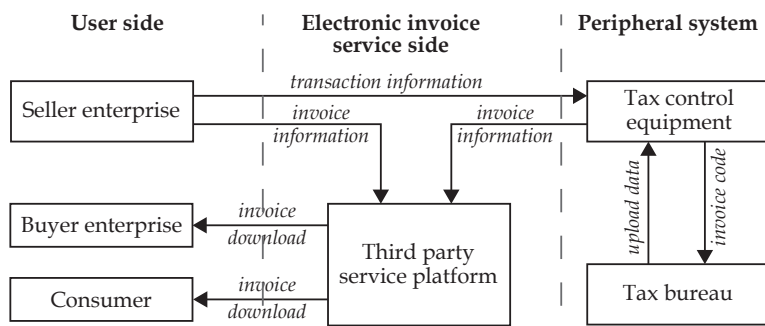
In July 2015, “the notice about the VAT invoice system upgrade electronic invoice commissioning work about the problem” was issued by the State Administration of Taxation. Since August 1, 2015, the trial operation about electronic invoice of VAT invoice system upgrade version were carried out in Beijing, Shanghai, Zhejiang and Shenzhen.

In November 2015, electronic invoice of VAT invoice system upgrade version were pushed to the whole country. The legal effect, basic purpose and basic usage of VAT electronic invoice are the same with the VAT paper invoice.

In April 2016, the national telecommunications industry’s first value-added tax electronic ordinary invoice was issued by the Ningbo China Telecom. The scope of application of electronic invoices has been further widened.

Thus, the promotion of electronic invoices in China has entered the multi-dimensional application stage. From the industry perspective, electronic invoices have been applied to business, finance and insurance, telecommunications and other industries. From the geographical perspective, electronic invoices have been extended to all the country from the first five pilot cities. From the perspective of the enterprise, more and more enterprises begin to use electronic invoices, such as Jingdong mall, China Telecom, China life and so on.

At present, the operation mode of electronic invoice in China is “tax control equipment + third party service platform”. On the basis of the VAT invoice system, the State Administration of Taxation developed tax control system about VAT electronic ordinary invoice. At the same time, transformation plan about connect national tax control system and local electronic invoice system was developed. The specific application scenarios of electronic invoice are mainly composed of three parts: user side, electronic invoice service side and peripheral system (Figure).



Operation mode of electronic invoice in China

Development orientation of electronic invoice. First, the promotion of electronic invoices should not be limited to the field of online transactions, the field of offline transactions also should be covered. Although the application of electronic invoice is closely related to the rapid development of e-commerce, it should not be confined to the field of electronic commerce. The practical experience of European Union and Taiwan area of China can be seen, electronic invoices also play an important role in the field of public procurement of the government, the residents of the daily consumption of physical entities.

Second, the promotion of electronic invoices should jump out of misunderstanding about traditional paper invoice management, focusing on the record of complete, comprehensive, real transaction information. At the beginning of the application of electronic invoices in China, the main purpose is to reduce the cost of paper invoices, thus reducing the burden for enterprises and increasing the efficiency for enterprises. Therefore, the application of the early electronic invoice is only the electronic of the paper invoice, which does not involve the “Information Management Tax”. But in the long run, the electronic invoice shall be located in the electronic information that records the actual transaction between micro economic entities. If this function can be achieved, data about micro economic activity can be automatic and real-time collected. National economic statistics and indicators of economic operation can be automatically generated [18]. In a sense, it constitutes the technical and data base of national governance modernization in the digital economy era.

The influence of electronic invoices on tax collection and existing problems

The influence of electronic invoices on tax collection. Electronic invoices can make up for the deficiencies of the current tax collection and management system in the network information era, and have the important significance in saving the cost of tax collection and management, improving the efficiency of tax collection and

management, and promoting the modernization of tax administration.

Electronic invoice helps to strengthen the taxation in the field of e-commerce. In recent years, with the popularity of the Internet, the improvement of network payment technology and the change of consumption concept, online shopping is more and more popular. The scale of e-commerce is also growing rapidly, widely penetrated into various fields. The rapid development of e-commerce has changed the traditional mode of management and production organization, and also challenged the traditional tax collection and management system. Paperless network transactions and the concealment of the transaction subject increase the invisibility of the transaction process in e-commerce. Electricity supplier operators often use a variety of means not open or less invoice, so as to avoid tax collection, and reduce the tax payment [19]. Different from traditional paper invoices, the application of electronic invoices can fully meet the requirements of electronic transactions and electronic payment. Electronic invoice can identify the identity of the transaction entity in real time, get the transaction information, and lay the foundation for the taxation of electronic commerce [20].

Saving costs and boosting environmental protection. For a long time, China has set up a special paper invoice system. Paper invoice has five functions: nuclear tax, reimbursement, and accounting, warranty and safeguard legal rights. Invoice as a commercial document, is record the economic exchanges between the relevant subjects in the course of the economic activities. Invoice not only is the accounting vouchers, and is an important basis for tax collection. Invoice is an effective proof of record of various business activities. Because of the wide use of the paper invoice, so there is a huge social cost. Application of electronic invoices, essentially means that fundamental changes in China's paper invoice management system. Application of electronic invoices, will help reduce the cost of tax collection, improve the efficiency of the Tax Revenue Department, enhance the modernization and informa-

tization level of the Tax Revenue Department, and enhance the management level and service level of tax collection and management.

Application of electronic invoices, will help to establish a green, environmentally friendly and sustainable social environment. First, save the cost of paper invoices, contribute to the reduction of environmental pollution and social sustainable development. Second, save a large number of commuter demand and labor costs of enterprises and institutions, and reduce carbon emissions. Third, promote the establishment of social credit system, solve the problem of the establishment of the integrity system in the process of economic development in China.

Improve the efficiency of tax collection and management. First, electronic invoice and relevant transfer information can be uploaded real-time tax control system. The tax authorities can monitor the transaction process and master the taxpayer's production and operation, and promptly found illegal tax violations, through inquiry, statistics and Analysis on the electronic invoice information. So electronic invoice can enhance the pertinence and effectiveness of tax collection and administration. Secondly, the electronic invoice has the characteristics of paperless and automation. The use of electronic invoice can not only save a large number of printing, transportation, storage and distribution of human and material resources, but also greatly reduce the workload of the tax authorities in the audit, verification, audit invoices and other aspects. On the one hand, it improves the efficiency of tax collection and management of tax authorities, on the other hand, it can release more government resources to improve the level of tax service [21].

Speed up informationization of government management. At present, the technology content of government management methods is relatively low, it is difficult to timely and accurate access to relevant enterprises, market, consumer information, and government management lags behind economic development, especially the development of network economy cause

the difficulties of government management. China's statistical system is based on the National Bureau of statistics, and is formed through the combination of various government departments. A lot of statistical data is reported layer by layer, and there are a lot of subjective components, even some data serious distortion. This will directly lead to the basic data distortion which are used in China's macroeconomic regulation and control.

Therefore, from the point of long-term development, informationization of government management must be speed up, government management mode, must be transferred. The use of information technology and network tools can form an early warning mechanism, rapid response mechanism and comprehensive regulatory mechanism. The electronic invoice is precisely provides an important tool in this area. Because the electronic invoice can be used as a data carrier of actual transaction. In the premise of electronic invoice standardization, automatic formation of transaction records, real-time summary of transaction data, security transmission of electronic data, will become the source of China's real market data [22]. On this basis, it will reinforce the basic data system of our country, and provide important support for national decision-making, regulation and control of the economy and so on.

Existing problems. The development of electronic invoice has played an important role in saving the cost of tax collection and management and improving the efficiency of tax collection and management, but there are still some problems.

Lack of deep understanding of electronic invoices. At present, the main reason for the promotion and application of electronic invoice is attributed to the cost saving and strengthening the tax collection and management of e-commerce. Sufficient knowledge was not given in regulating government expenditure, improving the effectiveness of market regulation, protecting the interests of consumers, and regularizing offline entity transaction.

The implementation of the electronic invoice can reduce operating costs of tax-

payer, reduce paper consumption, and facilitate the preservation and use of consumers. The implementation of electronic invoice also create the necessary conditions for the automatic collection and use of tax data. However, if the electronic invoice is only regarded as the upgrade of the paper invoice and the network invoice, and its application value is still confined to the level of “control tax through paper invoice”. This will undoubtedly greatly limit the role of electronic invoice.

There still exist reimbursement problems in the early stage of the promotion. At present, there are no obstacles in the policy about reimbursement issues on paper edition of electronic invoices in China. But there is a risk of repeated reimbursement. Paper invoices and electronic invoices have the appropriate security measures, but the paper invoice is the only, and the paper version of electronic invoice can be unlimited copy. In order to ensure the paper version of electronic invoice has not been distorted or repeated reimbursement, each paper version of electronic invoice need artificial verification and comparison. This leads to the reimbursement about paper version of electronic invoice not reduce the workload but bring greater financial personnel workload.

In addition, for consumers, the use of paper version of electronic invoices means that the cost of printing of electronic invoice will be passed on to consumers. One of the purposes of the implementation of electronic invoice is paperless, but the current accounting system of most enterprises are difficult to achieve paperless, especially in reimbursement and storage of electronic invoice. In other words, at present, there is no such condition that invoice can be reimbursed only use electronic version of electronic invoice. Consumers still can not bypass the printing of electronic invoice in the reimbursement process. As a result, the cost of printing of electronic invoice is transferred from the enterprise to the consumer.

It is still not the true “Information Management Tax”. The change of management center of invoice from the “legitimate control of invoice” to the “real time acquisi-

tion of the tax information” is an important attempt to transition from “control tax through paper invoice” to “information management tax”. Electronic invoice provides the basis for the “information management tax”. But, the current management model of electronic invoice is a copy of the traditional model of paper invoice. Although the network provides convenience for the issuing of electronic invoices. The information of electronic invoice need manual input, and that is not associated with the trading system of enterprises. Filling process of electronic invoice and trading process were in a state of separation permanent. Therefore there will still be the problem of fake invoices and real-time monitoring of the tax information is limited.

Promotion path of electronic invoice needs to be further optimized. Promotion path of electronic invoice in EU and Taiwan display that large enterprises and government public procurement are the preferred applications. The main reason is that there is small resistance in these field. And the economic benefits and social benefits achieved in the short term are greater [23]. In the field of large enterprises and B2B, there are good information environment. This provides a convenient way to record the real transaction information for electronic invoice. In the field of government public procurement, due to the centralized payment of government agencies and the basis of the settlement of individual business card, the implementation of electronic invoice can realize automatic reimbursement and accounting records.

The impact of electronic invoices on China's tax reform

The promotion of electronic invoice is an important measure of the implementation of the “Internet plus Taxation”. In order to adapt to the development of internet and e-commerce, and meet the needs of internet tax services for taxpayers. State Administration of Taxation promote the work of “Internet plus Taxation”, in the hope of promoting the modernization of tax.

The promotion of electronic invoice is an important measure to practice the work of “Internet plus Taxation”. Since 2013, Beijing and other provinces have carried out the application of electronic invoice pilot, and their own electronic invoice system was researched and developed. After that, the State Administration of Taxation developed a new electronic invoice system under the favorable conditions for the nationwide implementation of upgraded version of the VAT invoice system. At the same time, the new scheme was developed, in order to connect the existing electronic invoice system of some provinces.

Electronic invoice will lay a solid foundation for the China’s digital economy tax reform. The tax problem of the digital economy is approaching, with the rapid development of the global digital economy. All countries in the world are studying and formulating tax law system and relevant measures to deal with the challenge of the digital economy. Britain, Australia, South Korea, India and other countries have begun to levy tax in the field of e-commerce. In July 2013, OECD launches Action Plan on Base Erosion and Profit Shifting. Address the tax challenges of the digital economy is listed as the primary item in the action plan.

There is no doubt that levy tax on the digital economy. But the most important thing is not how much tax can be levied, but the ability to levy a tax on the digital economy. Because of the concealment and rapid change of the digital economy, in order to levy a tax, the identification of transaction subject and the capture of transaction information need to be first resolved. For the digital economy, the transaction can be completed through the network, if there are only a few peripheral measures, it is difficult to obtain a complete transaction information. Electronic invoice is the most appropriate and effective tool. Electronic invoice is the basis of taxation on digital economy [24]. On the one hand, the application of electronic invoice help the tax department to gradually realize tax control and supervision, on the other hand, the cost of tax collection will be reduced and the

efficiency of the tax department can be greatly improved.

In the short term, the development of electronic invoice resulting in double-track system that China’s electronic invoice and paper invoices coexist. At present, China’s paper invoice system is very large, in the short term, the use of electronic invoice to replace paper invoices is not a realistic idea. There is a huge difference in the scale of enterprises in China, including large enterprises, also including individual industrial and commercial households. Therefore, the demand for electronic invoice is huge difference between large enterprises and small businesses. So, the promotion of electronic invoice should be double track system that electronic invoices and paper invoices coexist. After a relatively long process, the final transition to a single era of electronic invoicing. In the promotion process, the use of electronic invoices in e-commerce transactions can be given priority, so as to avoid conflicts with the existing paper invoice.

In the long run, the development of electronic invoice forced China’s tax reform, may be reconstruct the current paper invoice system of China. Due to the contact of accounting function and fiscal function of invoice, a huge demand of “false invoices” is formed. The phenomenon of false invoices is difficult to prohibit in China. The tax authorities shall control the invoice by screening the legality of the invoice form. And the tax authorities ignore the supervision of the authenticity of the transaction embodied in the invoice.

The purpose of the implementation of electronic invoice is to save transaction costs, to stop the illegal acts of invoices, but the progress of technology has not blocked the pace of illegal invoices, illegal means will show a more subtle features. Facts show that the application of paper invoices and regulatory model to monitor the electronic invoice is unable to control the illegal acts of invoices. Therefore, we should take the technical innovation as an opportunity to reflect on the limitations of the current invoice supervision model, and according to the

characteristics of electronic invoices, promote the change of the invoice system. First, to ensure the equality of the three parties which are enterprise, consumer and taxation department. Second, to pro-

mote the construction of electronic invoice platform and the management of the market. Third, to promote real-time, automatic correlation between transactions and electronic invoice.

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CUSTOMS MEDIATION IN FOREIGN TRADE: SCIENTIFIC AND PRACTICAL ASPECTS

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ABSTRACT

The activity of customs clearance agents in the procedure of customs clearance of goods has a substantial importance. Their professional knowledge helps the subjects of foreign economic activity to accomplish the appropriate customs procedures in proper time, and therefore to accelerate the foreign trade turnover of goods.

As a problem statement it is expedient to study scientific, theoretical and pragmatic peculiarities of customs clearance agents functioning in the sphere of foreign trade. It would take into account European priorities and the current state of the Ukraine's economy development.

This article is intended to systematize and structure theoretical developments and practical peculiarities in the sphere of effective customs mediation organization in the context of foreign trade intensification and establishment of productive relations with international partners of Ukraine.

This article defines the relationship of the basic concepts of the state customs business in the context of elements' identification of customs mediation. The essence of customs mediation in foreign economic activity and principles of international intermediaries' activity are described. The advantages and problematic aspects of customs clearance agents attraction are outlined. The main indicators of Ukraine's foreign trade are analyzed. Much attention is given to the adjustment of relations between Ukraine, the EU countries and Asia as these cooperation vectors are characterized by high dynamism in export and import of goods. In accordance with the investigation of foreign experience in the sphere of customs mediation, and in the context of intensification of foreign trade activity, the ways of increasing the effectiveness of intermediary services on customs clearance and declaration by national enterprises have been formed

KEYWORDS

Goods declaration, foreign trade, customs, customs clearance, customs mediation, customs broker, fiscal policy

HIGHLIGHTS

1. The use of customs broker services in Ukraine is a necessary step towards the further integration of the country into the civilized development of its external economic relations
2. The professional brokers and the state are interested in developing a unified regulatory and legal framework, that would contribute to creating the favourable climate in the market of customs services
3. The adaptation of foreign experience of regulating the activities of the customs brokers can improve the relations between customs broker, the participants of foreign economic activity and customs divisions of Ukraine

ТАМОЖЕННОЕ ПОСРЕДНИЧЕСТВО ВО ВНЕШНЕЙ ТОРГОВЛЕ: НАУЧНО-ПРАКТИЧЕСКИЕ АСПЕКТЫ

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АННОТАЦИЯ

В процедуре таможенного оформления товаров существенную роль играют таможенные посредники, чей профессиональный опыт и знания помогают субъектам внешнеэкономической деятельности своевременно осуществлять таможенные процедуры, а, следовательно, ускорить внешнеторговый оборот. В связи с этим возникла необходимость изучения теории и практики функционирования таможенных посредников в сфере внешней торговли, а также особенностей их деятельности с учетом европейских приоритетов и современного состояния экономики Украины. Цель статьи заключается в систематизации и структуризации теоретических положений и изучение сложившейся практики организации эффективного таможенного посредничества в контексте активизации внешней торговли и налаживания продуктивных отношений Украины с международными партнерами. В статье выявлена взаимосвязь основных понятий государственного таможенного дела на основе идентификации элементов таможенного посредничества. Определены сущность таможенного посредничества во внешнеэкономической деятельности, принципы деятельности международных посредников. Отмечены преимущества и проблемные аспекты привлечения таможенных посредников. Проанализированы основные показатели внешней торговли Украины, значительное внимание уделено налаживанию отношений Украины со странами ЕС и Азии, поскольку данные векторы сотрудничества характеризуются высоким динамизмом в сфере экспорта и импорта товаров. На основе исследования международного опыта применения таможенного посредничества для активизации внешнеторговой деятельности предложены пути повышения эффективности посреднических услуг по таможенному оформлению и декларированию

КЛЮЧЕВЫЕ СЛОВА

Декларирование товаров, внешняя торговля, таможенное дело, таможенное оформление, таможенное посредничество, таможенный брокер, фискальная политика

ОСНОВНЫЕ ПОЛОЖЕНИЯ

1. Использование услуг таможенных брокеров в Украине является необходимым шагом на пути дальнейшей интеграции страны в международное экономическое пространство и цивилизованное развитие ее внешнеэкономических связей
2. Профессиональные брокеры и государство заинтересованы в разработке единой нормативно-правовой базы, которая будет способствовать созданию благоприятного климата для развития рынка таможенных услуг
3. Адаптация зарубежного опыта регулирования деятельности таможенных брокеров позволит улучшить отношения между ними и другими участниками внешнеэкономической деятельности и таможенными органами Украины

Relevance of the research topic

The restructuring of customs legislation which is in progress in our country for a long time, covers almost all aspects of the customs business including the sphere of intermediary customs services. The customs law institute is constantly in the process of development and improvement. At each stage, there are certain problems and difficulties with the implementation of individual provisions of the legislation on the specified issues into practice which indicates the necessity for further search of new forms, models and mechanisms of customs mediation.

State's influence and interference in the sphere of foreign economic relations under crisis conditions of the national economy is related to the requirement of organization and management of foreign trade processes, the establishment of certain rules and restrictions in order to regulate relations which arise because of the movement of goods and vehicles across the customs border of Ukraine.

Today, Ukraine is interested in creation of the appropriate legal field for customs clearance agents as participants of customs jural relationships. The subjects of customs mediation have their own legal status defined in the norms of customs legislation, but it can be stated that organizational and legal support of the activities of customs clearance agents needs improvement which will promote the development of the customs infrastructure indispensable all around, the qualitative process of passing customs formalities and the intensification of foreign trade activity.

Problem statement

Under conditions of globalization of world economy, European integration of the national economy and the dynamic development of foreign economic activity the importance of services, provided when goods are transferred through the customs border of Ukraine, increases. The term of passing the customs formalities, the financial expenses of the subjects of importers and exporters, timeliness and

completeness of the customs payments administration depend on the quality and completeness of such services. Thus, issues of the development of customs mediation in foreign trade require more fundamental scientific researches.

Analysis of recent researches and publications

Significant contribution to the research of the relevant peculiarities of the customs regulation accomplishment of foreign economic activity was made by such scholars as I. Berezhniuk, A. Voitseshchuk, T. Voronchenko, O. Hrebelnyk, A. Krysovatyi, A. Mazaraki, V. Mantusov, T. Melnyk, P. Pashko, L. Pismachenko, K. Puhachevska, V. Fedosov and others. It is also worth mentioning that in recent years the attention of scholars is attracted by trends of functioning of customs clearance agents in Ukrainian fiscal practice, which were investigated in the works by I. Bondarenko, A. Dunska, O. Korniiichuk, O. Korobkova, Y. Medvid, I. Svitlak and others.

It is important to note that the global aspects of the mediation implementation in the sphere of customs are also the subject of the investigation of foreign experts. In particular, in this direction we can distinguish the following: T. Cantens, W. Czyzowicz, A. Grainger, E. Gwardzinska, G. Llanto, C. Milner, J. Nieva, F. L. Palomares, C. Pastor and others.

The questions of customs regulation became more relevant in the context of globalization and the growth in global trade [1; 2]. In recent years much research has investigated the simplification of the international business regulations [3] and reduction of trade costs [4]. Some research contains information on the impact of customs regulation to the socio-economic development of the regions [5]. However, the findings of above mentioned works necessarily give a somewhat piecemeal and disjointed view of the role of customs mediation in the global integration processes.

Selection of previously unsettled parts of the general issue

At the same time, the development of the effective customs mediation plays

a significant role at the present stage in the context of the intensification of foreign economic relations between Ukraine, the EU countries, Asia and America. At the current stage, the ways of improving the organizational and legal basis for the activities of customs brokers, conditions of their functioning, which would take into account the latest technologies, are not sufficiently worked up. It is also important to substantiate the procedures for monitoring the quality of provided services in the sphere of customs declaration and clearance which would take into account the global experience.

The aim of the article is to extend the scientific researches and to substantiate the practical aspects of customs mediation functioning in the foreign trade.

Presenting main material

Trends of the conduction of international trade activity affirm its high significance as an external factor of national economic development. International trade actively integrates national market subjects and state institutions into the global economic space. The objects of the international commodity exchange, which are completely absorbed by all spheres of social reproduction and consumption, become, in some cases, the basic resources of scientific and technological progress.

The indicator of the quality and effectiveness of customs services in international trade is the speed of foreign trade agreements' implementation, the speed of goods movement across the customs border of Ukraine, as well as the transparency

of the state administration of foreign economic activity.

These criteria are influenced by covenants of foreign trade agreement and a large number of professional participants of the foreign trade agreement implementation: ship holders, carriers, forwarders, ports, marine agents, chartering brokers, customs brokers and others.

In the sector of customs, such services are provided by specialized companies which, in accordance with the Customs Code of Ukraine, are authorized to carry out such activities. The analysis of the regulatory and legal framework in the sphere of customs shows that it mainly recalculates the customs services but it does not reveal the economic and legal character of customs services. Despite the explicit orientation of the provisions of the Customs Code of Ukraine to international norms, there is no concept of "customs service" in it¹.

The basic concepts in the customs sphere, which are related to the process of customs control, are defined by the Customs Code of Ukraine. The interconnection of the main concepts mentioned in the Customs Code of Ukraine, shown in Figure 1, demonstrates that the basic concepts in the customs sphere, fixed in the current customs code, are: customs sphere, customs policy, customs control, customs procedures, customs regimes, customs clearance, customs regimes, customs clearance.

The concept of "customs service" in Ukrainian practice is not identified, al-

¹ *Customs Code of Ukraine*. 2012. Available at: <http://zakon4.rada.gov.ua/laws/show/4495-17>

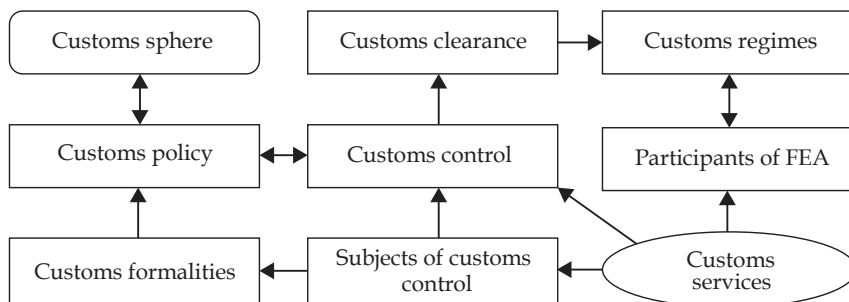


Figure 1. Interconnection of basic concepts of state customs sphere in the context of identification of the elements of customs mediation

though, at the level of concepts of the State Fiscal Service of Ukraine, this term has been actively used in recent years.

I. Bondarenko defines customs services as legally provided activity of customs authorities, specialized customs establishments and organizations, as well as subjects of entrepreneurial business, which is accomplished on the initiative of individuals and legal entities, aimed at the realization of rights, freedoms and lawful interests in the sphere of customs activities [6, p. 47].

According to A. Dunska, trade and intermediary operations in the foreign economic activity are operations of purchase and sell of goods which are accomplished by the instructions of an exporter or an importer by an independent intermediary firm on the basis of special orders or individual agreements [7, p. 90].

Customs broker – is any person having a valid license certificate or a professional identification card, issued by the competent state regulatory bodies. The profession of customs broker includes the following range of services: consulting on customs law issues, preparation of customs documentation for export and import operations' registration, signing and submission of documents related to customs declaration, representation of interests in the bodies authorized to implement customs policy etc. [8, p. 2].

European practice shows the existence of customs mediation in three forms:

- customs brokers are considered to be the only authorized organizations to implement intermediary activity (Portugal);
- customs brokers accomplish direct representation (Poland, Italy) or indirect representation (Belgium) of the subject of foreign economic activity;
- free choice of people – customs brokers with different types of functioning and customs qualifications (Germany, Great Britain) [9].

Knowledge and experience of customs brokers in the sphere of customs legislation and regulation can be useful not only for subjects of foreign economic activity, but also for state fiscal authorities. Despite the fact that customs brokers help

individuals in documenting the customs clearance of goods, they also operate in the interest of the state, since the execution of customs procedures involves the payment of appropriate tax revenues, which replenish the budget resources².

In the legislative area, the main purpose of the fiscal authorities is to create favorable conditions for the development of the foreign economic activity, to ensure the security of society, to protect customs interests of Ukraine, that is, customs activity, the special feature of which is its mandatory character for participants of foreign trade activity³.

Customs services are the result of activities of fiscal authorities and enterprises in the customs sphere, the main purpose of which is to facilitate the passing of consignments across the customs border of Ukraine. Depending on the subject, which provides customs services, we can distinguish between the state customs services and customs services of private enterprises. In this case, SFS of Ukraine provides state customs services. Among services of private enterprises, we can mention services, which are provided by customs brokers, owners of customs warehouses, duty-free shops, free economic zones, customs complexes and other enterprises.

The analysis of the norms of customs legislation allowed us to systemize the general list of customs services provided by intermediaries in the customs sphere: consultations on customs legislation and foreign economic activity issues; expert assessment of documentation provided for the declaration of goods and vehicles; determination of the code of goods according to the Ukrainian Classifier of Goods of Foreign Economic Activity; working out the foreign economic contracts on the terms of the customer; de-

² WCO Study Report on Customs Brokers. World Customs Organization, 2016. Available at: http://www.wcoomd.org/en/topics/facilitation/-/media/WCO/Public/Global/PDF/Topics/Facilitation/Instruments%20and%20Tools/Tools/Study%20Report%20on%20Customs%20Brokers/WCO%20Study%20Report%20on%20Customs%20Brokers_EN.ashx.

³ Customs Code of Ukraine. 2012. Available at: <http://zakon4.rada.gov.ua/laws/show/4495-17>.

claring services (filling in declarations, documents, working out (filling in) specifications, invoices, other accompanying documents); work with goods, which are under customs control in the warehouse of temporary storage or in the customs licensed warehouse (sorting, drying, marking etc.) and the provision of other works and services related to the realization of right to move objects across the customs border of the state.

In many countries, customs clearance of goods and vehicles is usually implemented, as a rule, only with participation of customs brokers. Some especially large importers keep staff professionals who work exclusively for this company. However, in general, customs brokers are employees of private agencies acting on behalf of different importers and are professional intermediaries. In any case, customs broker must have a licensed permission to implement customs mediation.

In Australia, customs brokers are licensed by the Australian Customs Service and some are members of the Customs Brokers and Forwarders Council of Australia. In Canada customs brokers are licensed by the Canada Border Service Agency (Canada Customs) and most are members of the Canadian Society of Customs Brokers. To operate as a customs broker in New Zealand, one needs a Unique User Identification (UUI). UUI Accreditation can be achieved by sitting and passing three exams set by the Customs Brokers and Freight Forwarders Federation of New Zealand Inc. (CBAFF) [10].

Receiving the services from the customs broker, customers, who are subjects of households, receive the following benefits:

- there is an opportunity to receive services of highly skilled specialists in such specific area as customs declaration and customs transportation (since customs brokers are subjects to certain financial, professional, qualification, organizational, technical and special requirements, and this, in its turn, reduces the risk of customers of such intermediaries);

- the expenses for services related to the declaration of goods and vehicles which are moved across the customs bor-

der, as well as the transportation of goods which are under customs control with participation of customs intermediaries, in the customs sphere, are considerably less, since they are calculated in the amount of a certain percentage to the volume of goods which are moved (transported);

- a significant increase in the volume of export and import operations and their prompt execution, with the help of the subjects of entrepreneurial activity in the customs sphere, reduces the growth of own expenses for such purposes, as well as a significant time savings take place [11, p. 51].

The owners of warehouses and owners of warehouses for temporary storage are members of the main subjects that provide services for the storage of goods which are under the customs control. The storage of goods under customs control enables the subject of foreign economic activity to accomplish all permitting procedures and complete the process of passing customs formalities without physically moving goods from the warehouse territory.

From January 1, 2015 till June 28, 2015 249 licenses for customs broker activity implementation were issued (in accordance with the Law of Ukraine of March 2, 2015 № 222-VIII “On Licensing of the Household Activity Types”, from June 28, 2015 licensing of customs broker activity was terminated and licenses for customs broker activity were declared invalid). From June 28, 2015, permits for implementation of customs broker activity are provided by including enterprises in the customs brokers’ register. 4 152 permits were granted from June 28, 2015 till December 31, 2015. On January 1, 2016 there were 310 customs warehouses which implemented their activity. The number of enterprises authorized to open and operate the customs warehouse on June 1, 2017 was 291 units, most of them located in Kyiv, Odesa and Dnipropetrovsk custom houses of SFS of Ukraine⁴.

⁴ Register of companies granted permission to open and operate a bonded warehouse. 2017. Available at: <http://sfs.gov.ua/dovidniki-reestri--perelik/reestri/94929.html>.

When analyzing the role of the subjects of intermediary activity in the customs sphere in the process of moving goods, objects, vehicles and for customs activity itself, it is important to draw attention to the problem aspects of regulation and implementation of this activity, which concern both SFS of Ukraine and the intermediary quarters:

- firstly, the absence of transparent legal field for intermediaries' activity in the customs sphere;

- secondly, increase in the number of offences committed by customs clearance agents;

- thirdly, the abuse of customs clearance agents in the market of customs services (overvalued prices for customs services, low quality of services);

- fourth, low level of interaction of customs authorities with customs clearance agents [12, p. 14].

The involvement of the domestic economy in world globalization measures contributes to the expansion of Ukraine's possibilities to conduct trade operations in international markets. Despite the favourable external conditions for the development of foreign trade there exist internal obstacles – the military and political conflict in the east and the south of the country, the deterioration of economic relations with some countries, crisis state of the state's economy, the instability of the foreign exchange policy, frequent changes and additions in the customs and tax administration sphere, corruption phenomena and so on. As a result, conditions and possibilities of co-

operation of domestic enterprises with foreign partners change. Some areas of international trade cooperation become prolonged, form regularities of their development, others are short-term, reflecting certain trends of cooperation.

However, hoping for an effective economic growth in Ukraine through excessive opening and regulation of external economic activity sphere, at this stage, is threatening for the national security of the state. This forces us to digress from the conditions of open liberalism, to apply and optimize the tools of customs and tariff regulation more widely. Without full awareness of the current regulatory and fiscal parameters of the customs and tariff regulation, the conduction of optimization and wider implementation of protective measures are extremely complicated [13].

Nevertheless, Ukraine's foreign trade operations with commodities in 2016 were accomplished with partners from 217 countries. Ukraine exported goods to 191 countries, imported from 201 countries. The number of enterprises, engaged in foreign trade of goods, amounted to 14 700 units in export and 22 300 units in import.

Export of goods in 2016 amounted to 36.4 billion USD and decreased by 4.6 % of the volume of 2015. The import of goods amounted to 39.2 billion USD and increased by 4.6 % respectively. Negative balance of foreign trade of goods amounted to 2.9 billion USD (positive balance was observed in 2015 and amounted to 0.6 billion USD) (Table 1).

It should be noted that the formation of a positive balance in 2015 was influ-

Table 1

Dynamics of the main indicators of Ukraine's foreign trade in 2011–2016

Years	Export		Import		Balance
	Amount, thousand USD	in % for the previous year	Amount, thousand USD	in % for the previous year	Amount, thousand USD
2011	68 394 195.7	133.0	82 608 240.0	136.0	–14 214 044.3
2012	68 809 810.6	100.6	84 658 059.9	102.5	–15 848 249.3
2013	63 312 022.1	92.0	76 963 965.4	90.9	–13 651 943.3
2014	53 901 689.1	86.5	54 428 716.9	71.8	–527 027.8
2015	38 127 149.7	70.7	37 516 443.0	68.9	610 706.7
2016	36 361 711.2	95.4	39 249 797.2	104.6	–2 888 086.0

Source: State Statistics Service of Ukraine. Available at: https://ukrstat.org/uk/operativ/menu/menu_u/zed.htm.

enced by individual commodity groups: ferrous metals (7.4 billion USD), grain crops (5.9 billion USD), fat and oils of vegetable or animal origin (3.1 billion USD), ores, slag and ashes (1.6 billion USD), seeds and fruits of the oil plants (1.3 billion USD), wood and wooden products (1.0 billion USD). The export coverage ratio in 2015 was 1.02 (in 2013 – 0.82). However, these data are not particularly consolatory taking into account that in 2016 the balance again amounted to –880 686.4 thousand USD.

The analysis of the dynamics of export across continents showed that Ukraine exported mainly to the EU countries and Asia. Nevertheless, despite the decrease of the export indices from 2011 till 2016, it should be noted that the strategic partners for Ukraine in this context were constantly the EU countries (Figure 2) [11].

The dynamics of goods import in 2016 had a growing trend in external relations with the Asian and EU countries and a declining trend in relations with CIS countries (Figure 3)⁵.

⁵ State Statistics Service of Ukraine. Available at: https://ukrstat.org/uk/operativ/menu/menu_u/zed.htm.

Thus, the foreign trade of Ukraine is clearly characterized by the predominance of import operations over export operations. This, primarily, reflects the consumer policy of our state: we are ready to buy everything what us missing, but not to produce ourselves. Accordingly, domestic enterprises do not have a lot to sell in the external market.

Relatively stable and favourable conjuncture for goods of Ukrainian export although provided an increase in external revenues, however, the production capacities of the export leaders' spheres exhausted themselves completely. External trade in Ukraine has become largely one-way communication, that is, negative balance of the trade shows a significant predominance of import over export into our country and its mainly raw material component, rather than finished products, as it is in developed countries.

The absolute condition for the adaptation of the system of state customs regulation is to ensure continuous monitoring of the indicators of the activity efficiency of the customs authorities and the quality of their respective customs procedures during customs control and registration.

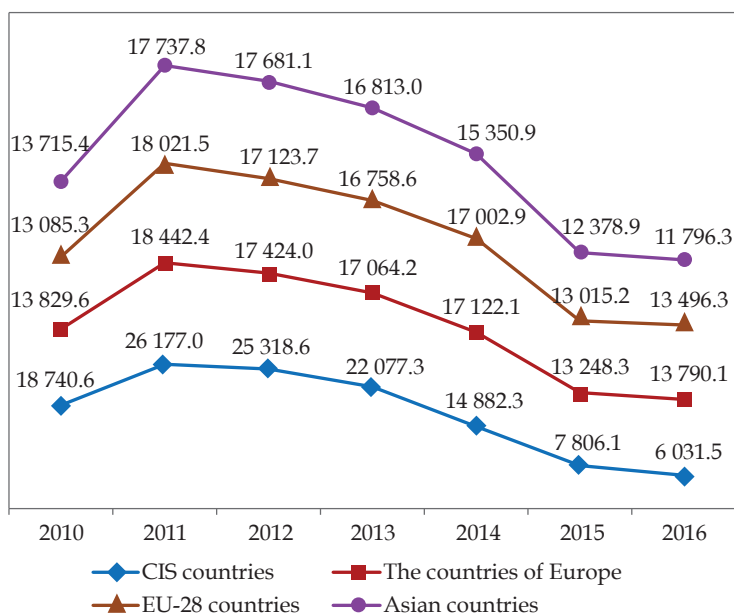


Figure 2. Dynamics of the amount of goods export in terms of the main geographical areas, million USD

At the same time, in the conditions of foreign trade development, increase of the amount of foreign economic operations and the amount of subjects of foreign economic activity, limited time for inspection of vehicles while crossing the customs border and the time for customs clearance of goods, there is a need to simplify customs procedures while maintaining the proper level of customs security.

In the European Union there are different concepts for regulation the activities of the customs brokers, but in general, their methods can be divided into 2 groups. In the first group we will include the states in which, from the ancient times, the access to the mediation activities is well protected and it is determined that the representative of the customs broker must meet special requirements. To these countries belong Greece, Spain, Italy and Portugal. The second group is characterized by less stringent requirements for customs clearance agents, relations between customs brokers and subjects of foreign economic activity are essentially unregulated. Even without an assessment of the professional competence from the customs authorities,

a person has an opportunity to practice this activity [14, p. 195].

If we compare the domestic requirements to the activities of the customs broker with European ones, Ukraine should be included into the first group, since Ukrainian legislation imposes certain requirements for customs broker's activities.

In France, the profession of the customs broker was first mentioned in 1935. French law defines a customs broker as a person holding an appropriate post related to the execution of customs formalities on behalf of a stranger, that is, subjects of foreign economic activity. Ministerial accreditation is provided on the basis of paying capacity and work experience, that is, the demonstration of one's abilities to perform customs operations is necessary. Attention is also paid to respectability, that is, to the absence of violations of tax and criminal law.

The permission to conduct the activity of the customs broker in France is granted. Interrelations with the customs authority are fixed by the agreement, which is also submitted for formal confirmation to the Ministry of Finance. Today, 825 people

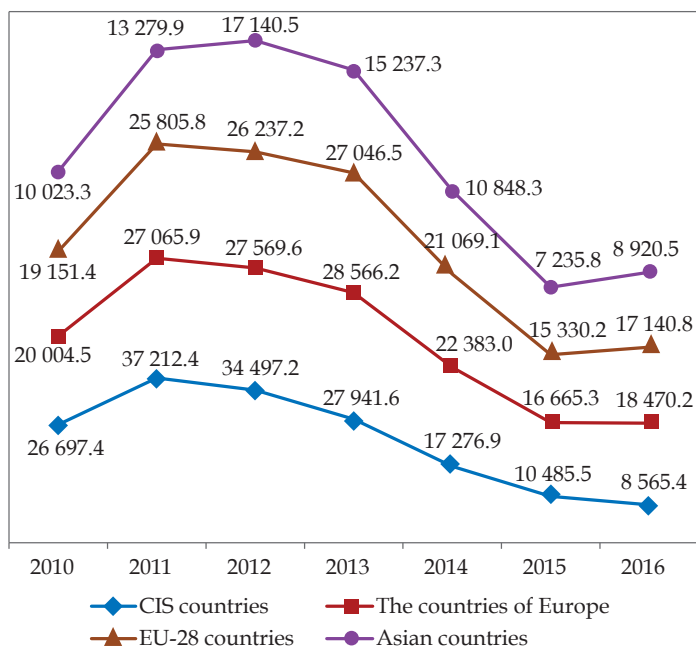


Figure 3. Dynamics of the amount of goods import in terms of the main geographical areas, million USD

are actively involved in the provision of customs services in France. Annually, on average, 20 new permits are granted.

Ukraine should borrow from France the practice of checking applicants for customs broker activities' implementation for the absence of tax perpetrations. However, the political culture of the French is much higher than of the Ukrainians, and therefore this innovation will cause the resentment on the part of Ukrainian customs brokers.

In the process of monitoring the foreign experience of customs broker activity regulation, the main models of state regulation of such activity were systemized (see Table 2) [15].

Table 2

**State regulation models
of customs broker activity**

Model	Level of regulation	Essence of regulation	Examples of application
1 model	Absence of state administration	Solving all issues related to customs representation on the basis and principles of self-regulation	Germany Great Britain Northern Ireland
2 model	Control by the appropriate department (customs authorities, custom house)	Control at the level of Central Body of executive power in the customs sphere	USA Canada France
3 model	Strong authoritative control by the ministry	Strengthening of administration, rigid requirements to customs clearance agents' activity	Greece Byelorussia Poland Italy, Spain

Along with this, from the foreign experience of regulating the activities of the customs brokers it is worth to draw the following aspects. Firstly, if the customs broker was convicted for violating tax legislation, for corruption, for thefts, then he/she loses the right to accomplish customs broker activity. Such innovation would stimulate Ukrainian customs brokers to observe legislation more seriously.

Secondly, the function of Greek customs brokers who accomplish the consulting not only customs legislation but also tax legislation, is relevant. For Ukraine, due to the consolidation of the State Customs Service with the State Tax Service, such innovation would be beneficial, would lead to the expansion of the functions of customs brokers and would give impetus to the development of tax consultants.

The importance of the customs broker's professionalism is extremely significant for the whole process totally, therefore, it is necessary to treat responsibly to its choice. In order to avoid possible problems, it is necessary to make sure that the broker enterprise is the part of the state register of customs brokers and has the license for the right to accomplish customs broker activities. When choosing a mediator attention is drawn to his/her personal qualities, presence of his/her connection in business and business circles. It is mandatory to receive information about the customs broker from his/her clients, competitors, as well as from other partners and contractors [16, p. 85].

There may be cases, when the cost price of goods, purchased and imported at a very low price, grows so much on the territory of Ukraine because of the taxes, customs payments, charges and the need of obtaining licensing documents, that further promotion of the product in the market has no practical sense. In order to avoid this, the customs broker in advance calculates the amount of future expenses, taking into account customs payments and other expenses.

The Customs Code, which is currently in force in Ukraine, does not sufficiently provide the mechanisms which would encourage the competition between licensed brokers working on a legal basis. With their deductions, which replenish the treasury, would simultaneously close the road to the customs services market for illegal and semi-legal intermediaries. As a result, the loser is both: the state and brokers: the first loses budgetary incomes, the second – clients who are tempted by low rates of illegal brokers. Therefore,

both professional brokers and the state are interested in developing a unified regulatory and legal framework, that would contribute to creating the favourable climate in the market of customs services. Another problem that customs brokers face today is mistrustful, and in some cases, negative attitude towards the broker by employees of customs authorities, caused by the lack of confidence in the relatively new participants in the market of customs services.

Conclusions

Thus, the use of customs broker services in Ukraine is a necessary step towards the further integration of the country into the civilized development of its external economic relations, as well as towards the significant simplification of the interaction between customs authorities and the participants of the external economic relations, towards the reduction of the level of violations and crimes at the customs.

The influence of intermediaries on customs activities and the process of shifting of goods, objects and vehicles has a significant role, which is the fulfillment of functions and tasks, closely related to the

tasks of the customs authorities and aimed at ensuring the process of realization of customs formalities through the provision of services of declaration, transportation, storage and related services, necessary for the effective realization, by the subjects of economic activity, of their right to shift objects across the customs border of Ukraine.

Activities of the customs brokers in the procedure of customs clearance of goods are essential. Their professional knowledge helps the subjects of external economic activity to implement appropriate customs procedures in time and therefore to accelerate the external trade turnover of goods.

Thus, one of the main priorities of the State Fiscal Service of Ukraine at present stage is the task of preparing and implementing in the activity of subjects of customs legal relations some modern, adjusted to the European legislation, legal acts designed to protect both the national economic interests of the state and the interests of the customs divisions of SFS of Ukraine and business intermediary structures providing relevant services in the external trade sphere.

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COMPETITION IN TAXATION AND THE FORMS OF ITS IMPLEMENTATION AMONG THE SUBJECTS OF THE RUSSIAN FEDERATION

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ABSTRACT

The article considers competition in taxation as the condition for territories' development and the forms of its implementation among regions. Studies of the theoretical aspects of competition in taxation emergence allowed concluding that primarily social relations are its basis. The author defines the concept of competition in taxation as the process of competitive privileges regulation while dealing with public law establishments to share the tax base by attracting mobile production factors and other advantages to achieve sustainable competitiveness. The author also adds her own features to the classification of competition in taxation. The application of this classification helps deeper understanding of this phenomenon in its versatility. Considering tax competition among the Russian Federation subjects in finance-budget sphere allowed seeing several stages in the development of competence in taxation among regions from its implementation through violence to the correct application of fiscal policy tools. The research revealed the main prerequisites of the development of regional competition in taxation in Russia, and provided the ways and measures of its regulation among the RF regions by the state. The duality of the implementation of regional taxation competition's inner potential is demonstrated through the main directions of its ultimate impact via the fiscal and regulation functions. Considering the forms of the implementation of tax competition among the RF regions provided the opportunity to prioritize among the regional taxes, which allow influencing the competitive advantages of the territories in order to attract investors in their regions. The review of the regulations of all regional authorities allowed making a conclusion about the existence of different positions on participation in competition in taxation. The research demonstrated that most efficient and available forms of taxpayer involvement are establishing additional benefits on regional taxes, differentiation of the income tax rate (its regional part), and that most regions using the tools of competition in taxation bet on the increase of investment attractiveness of their territory

KEYWORDS

Competition in taxation, tax competition, classification of tax competition, types of tax competition, the forms of tax competition implementation

HIGHLIGHTS

1. Competition in taxation is the process of regulation of competitive privileges in the process of social establishments interaction aimed at the sharing of tax bases at the expense of involving mobile production factors and other advantages in order to achieve and keep sustainable competitiveness
2. It is expedient to add two more characteristics – the parameters' size and the vector of the impact – to the tax competition classification
3. The vertical tax competition by offering tax benefits has objective limitations at the present stage in the Russian Federation
4. There are various positions among the subjects of the Russian Federation on participating in tax competition, most regions rely horizontal competition in taxation through the means that support investment activity at their territory

КОНКУРЕНЦИЯ В СФЕРЕ НАЛОГООБЛОЖЕНИЯ И ФОРМЫ ЕЕ ПРОЯВЛЕНИЯ МЕЖДУ СУБЪЕКТАМИ РОССИЙСКОЙ ФЕДЕРАЦИИ

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АННОТАЦИЯ

В статье рассматриваются конкуренция в сфере налогообложения как условие развития территорий и формы ее проявления между регионами. Изучение теоретических аспектов возникновения налоговой конкуренции позволило сделать вывод о том, что ее базой в первую очередь являются общественные отношения. Сформулировано авторское определение конкуренции в сфере налогообложения как процесс регулирования конкурентных привилегий при взаимодействии публично-правовых образований за распределение налоговой базы за счет привлечения мобильных факторов производства и других преимуществ с целью достижения и сохранения устойчивой конкурентоспособности. Дополнена авторскими признаками видовая классификация налоговой конкуренции, практическое применение которой способствует глубинному пониманию данного явления во всей его многогранности. Рассмотрение содержания налоговой конкуренции субъектов РФ в сфере финансово-бюджетных отношений дало возможность определить, что налоговая конкуренция между регионами прошла в своем развитии несколько этапов — от реализации методом физического насилия до грамотного использования инструментов фискальной политики. В ходе исследования выявлены основные предпосылки развития региональной налоговой конкуренции в России и выделены методы и меры государственного регулирования налоговой конкуренции между субъектами РФ. Показана двойственность реализации внутреннего потенциала региональной конкуренции в сфере налогообложения посредством основных направлений ее конечного действия через фискальную и регулирующую функции. Рассмотрение форм проявления налоговой конкуренции между субъектами РФ дало возможность выделить приоритеты в отношении региональных налогов, которые позволяют оказывать влияние на конкурентные преимущества территорий с целью привлечения инвесторов в свои регионы. На основе обзора нормативно-правовых актов всех региональных органов власти сделан вывод о присутствии у субъектов РФ различных позиций по вопросу участия в конкуренции в сфере налогообложения. В работе показано, что наиболее действенными и доступными для регионов формами привлечения налогоплательщиков на свою территорию являются установление дополнительных льгот по региональным налогам, дифференциация ставки по налогу на прибыль (региональной части), большинство регионов при использовании инструментов налоговой конкуренции делают ставку на повышение инвестиционной привлекательности своей территории

КЛЮЧЕВЫЕ СЛОВА

Конкуренция в сфере налогообложения, налоговая конкуренция, классификация налоговой конкуренции, виды налоговой конкуренции, формы проявления налоговой конкуренции

ОСНОВНЫЕ ПОЛОЖЕНИЯ

1. Конкуренция в сфере налогообложения это процесс регулирования конкурентных привилегий при взаимодействии публично-правовых образований за распределение налоговой базы за счет привлечения мобильных факторов производства и других преимуществ с целью достижения и сохранения устойчивой конкурентоспособности
2. Классификацию налоговой конкуренции следует дополнить двумя признаками — размер параметров конкуренции и вектор ее воздействия
3. Вертикальная конкуренция путем предоставления льгот по налогам на современном этапе в Российской Федерации имеет объективные ограничения
4. У субъектов Российской Федерации наблюдаются различные тактики участия в налоговой конкуренции, при этом большинство регионов делают ставку на горизонтальную конкуренцию с помощью мер, поддерживающие инвестиционную деятельность на своей территории

Introduction

The category “competition” is basic in the theory of economics. Today competition is a feature characteristic of any sphere of social life — economy, as well as politics and science. The experience of competition has been accumulating for many years; various theories and research about proper competitive behavior were developed. Initially the phenomenon of competence showed off solely in human relations. Such a model of behavior was often fruitful, and encouraged the improvement of human behavior in society. As the trade relations were developing, competition began to form among merchants and further went to tax relations. This fact allows tracing the genesis and the extension of the category and concept system of competition (Figure 1).

Figure 1 allows to conclude that the basis for any competition is primarily social relation, giving birth to social competition, which is defined by Ludwig von Mises as “some aspiration of individuals to have the most favorable position in the system of social cooperation” and which “exists in any imaginable way of social organization” [1, p. 138]. Further economic competition occurs in the process of social competition, and tax competition becomes a part of it later.

Literature

The phenomenon of tax competition, being an argument to achieve justice in the process of budget redistribution among states as well as inside one country, is un-

derstood ambiguously and is studies insufficiently. There are different positions among the representatives of foreign and Russian science referring to the nature of tax competition (E. Janeba, St. Osterloh [2, p. 90], H. Ogawa [3, p. 7], J. Pi, Yu Zhou [4, p. 105], S. Winter [5, p. 140], S. Brange-witz, S. Brockhoff [6, p. 5], T. E. Olsen, P. Osmundsen [7, p. 1580], Yu. Han, P. Pieretti, B. Zou [8, p. 508], G. D. Wilson, and D. E. Waldaxin, A. A. Yakovlev, and V. F. Lapo [9, p. 29, 30], T. D. Goodspeed [10, p. 582], T. F. Field [11, p. 1211–1216], A. I. Pogorletskiy [12, p. 126], A. M. Puz-in [13, p. 40], Y. B. Ivanov [14, p. 6], N. A. Leonova, G. V. Kolesnik [15, p. 83], O. Y. Bozulenko [16, p. 44], M. P. Pinskaya [17, p. 8], N. N. Laychenkova [18, p. 54], Encyclopedia... [19, p. 93]).

If one considers taxes as the price for the services offered by the state, then one should talk about the competition of offered social benefits concerning tax relations. In this case competition in taxation might be offering social benefits of higher quality and with fewer costs by one social establishment more efficiently than by the representatives of another social establishment [20, p. 180].

Having systematized various opinions the author considers competition in taxation to be the process of regulation of competitive privileges in the process of social establishments interaction aimed at the sharing of tax bases at the expense of involving mobile production factors and other advantages in order to achieve and keep sustainable competitiveness.

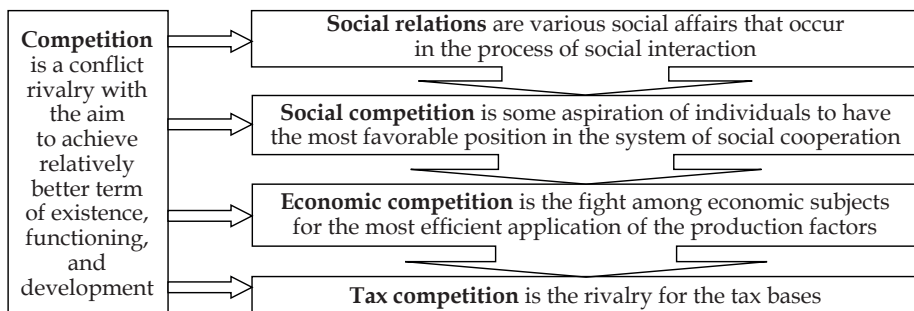


Figure 1. The genesis and extension of the category and concept system of competition

Having considered opinions on competition and described economic views on tax competition in mind, we shall schematically depict (Figure 2) the general picture of conceiving the scientific thoughts about tax competition among regions.

Based on Figure 2 one might conclude that the phenomena of market and international competition are mostly studied at present. Economic competition and, consequently, tax competition which has been studies since the middle of the 20th century occur with the development of market relations. For a long time, the scientists had thought that competition in taxation might show only in the process of interaction between the states, but recently the elements of tax competition have been seen more often between the regions.

Outcomes

The phenomenon of competition in taxation is fairly complex and multifaceted. However, there is no deployed classification of tax competition: many authors (M. R. Pinskaya [17, p. 14], A. I. Pogorletskiy [21, p. 4], T. V. Larina [22, p. 40], etc.) provide only fragmentary classification. Most researchers think that competition which exists in taxation is a form of economic competition. Thus, the author makes the classification of the types of tax competition based on the types of economic competition (Figure 3).

It is expedient to add two more characteristics – the parameters' size and the vector of the impact – to the tax competition classification given by various authors in order to make it more logically

perfect. In accordance with the size of the parameters we can divide tax competition into factual, minimal, maximal, and optimal. Factual tax competition is the really achieved level of indicators in tax competition and competitiveness. Minimal level of tax competition is the level when the participation in competition becomes possible. It is the minimal level of tax release which can attract taxpayers. Maximal tax competition is the level of given tax release when the main objective of tax competition is reached but the bottom of competition is not reached. Optimal tax competition is the situation when the objective of tax competition is reached with minimal tax losses.

According to the second classification characteristics (vector of impact) tax competition is divided into initial and reached. The initial level is the first level of tax competition and competitiveness indicators which the subject has before making the decision on taking part in tax competition. Reached competition can be observed in a certain period of time after taking some actions about the participation in tax competition [20, p. 183].

It should be noted that recently the issue of the competition for tax payers has become relevant in Russia. In the end of 1990 with the start of economic growth in Russia the idea of the competition among the social establishments aimed at improving the efficiency of their economic development was actively promoted.

Budget decentralization is the reason for the competition in taxation among territories which allows taxpayers to choose

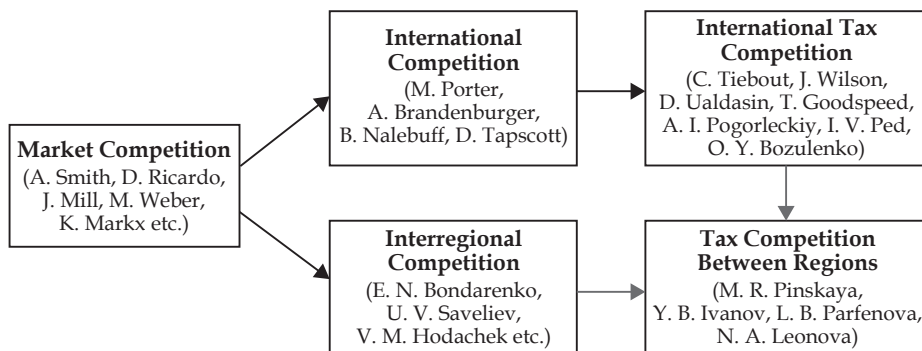


Figure 2. The origin of scientific thought on tax competition between regions

the best position in minimal tax payments but at the same time leads to equal location of business entities oriented on the more favorable tax regime. The choice of the direction of social establishment's tax development determines further events held by the authorities directed to the improvement of territory's competitiveness,

especially in the issues of taxation. It is obvious that the subjects of RF are interested in creating the advantages in their taxation system in comparison with other territories because taxpayers tend to select the region with the lowest tax load and wider range of tax tools to regulate their activity [25, p. 53].

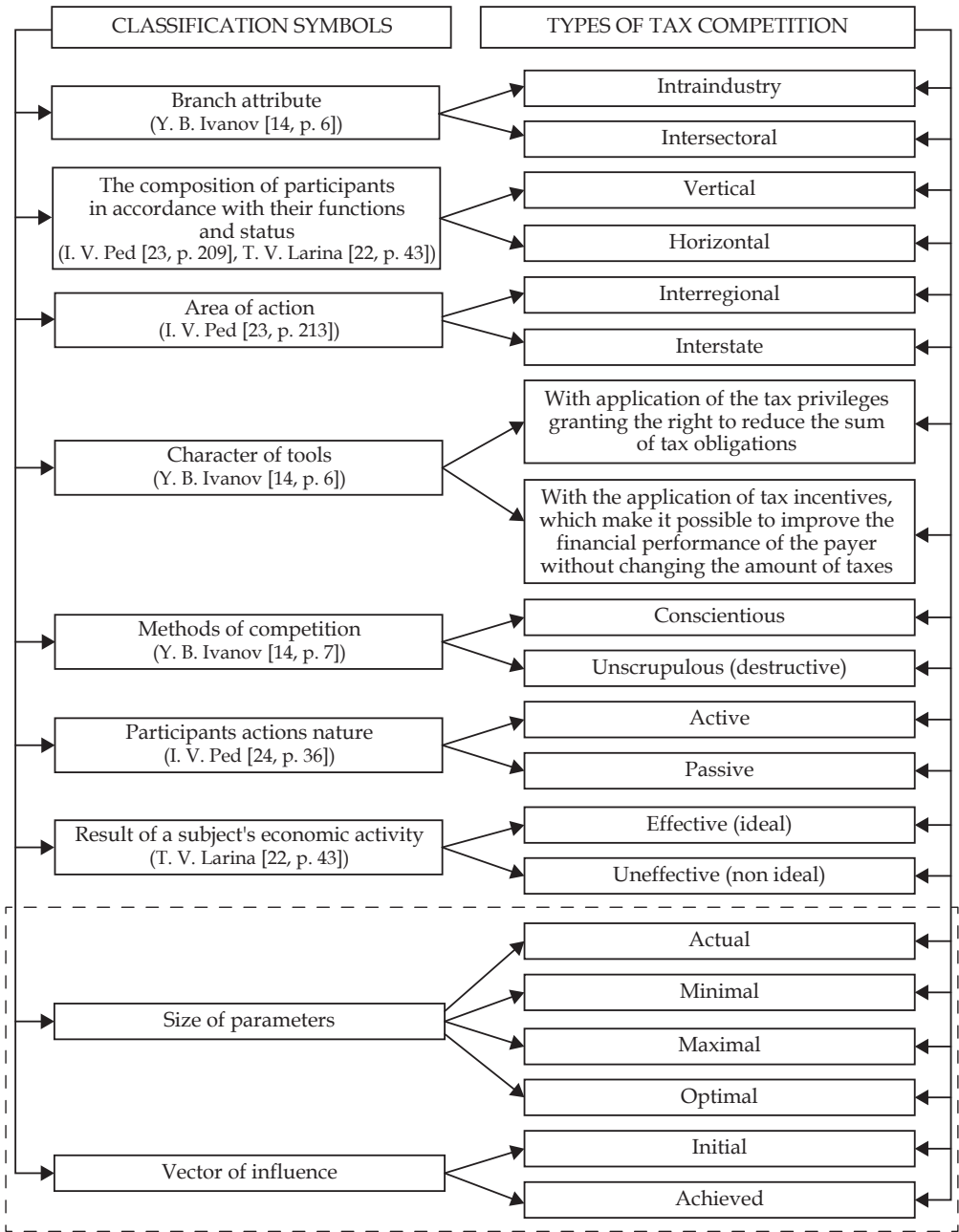


Figure 3. Specific classification of tax competition

In Russia the competition in taxation among the regions has become popular rather recently. Figure 4 demonstrates the main prerequisites of the tax competition among the subjects of the Russian Federation.

Thus, one can see that the main factor of competition in taxation among the subjects of the Russian Federation is the transition to market economy. Geopolitical, and natural and climatic differenced of the regions also occurred before this

period. However, they started to influence the development of the region sufficiently only after denying the plan economy.

The competitive environment in Russia formed not through evolution as in most developed countries, but through creating institutional conditions for the competitive behavior of the regions in taxation. For a short period of its presence tax competition among regions has demonstrated its advantaged and disadvantages (Table 1) [20, p. 183–184].

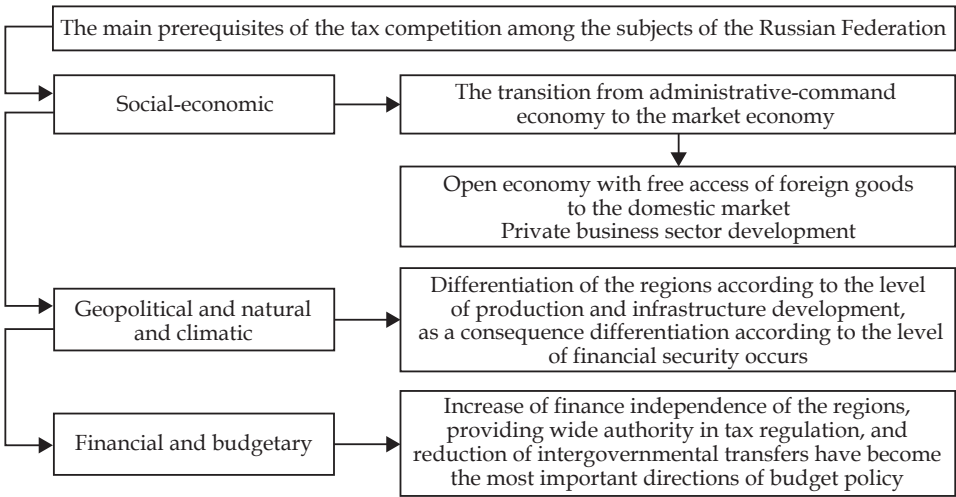


Figure 4. The main prerequisites of the development tax competition in the Russian Federation

Advantages and disadvantages of competition in taxation among the subjects of the Russian Federation

Table 1

Competition in taxation among the subjects of the Russian Federation	
Advantages	Disadvantages
1. Competition among the subjects of the Russian Federation leads to the efficient distribution of public goods. 2. Social establishments encourage potential taxpayers to a more fruitful development of territories by offering them a more beneficial combination of social goods. 3. Authorities try to provide social goods having minimal level of taxation. 4. Improving competitive tax advantages (i.e. exclusive tax conditions which might attract taxpayers to the territory of the participant) provides the opportunity of tax revenue increase for the territory. 5. Reduction of the tax load for production factors which are quite mobile. 6. Framework type of state’s impact on the economy and non-infringement of the democratic rights of the citizens	1. “Underexposure” of the attracted tax resources: the subject of RF compensates the tax revenue losses of the attracted tax resources at the expense of other (non-tax) resources or by enlarging the number of the imposed entities. 2. “Overexposure” of a certain taxpayer’s category, which causes tax avoidance. 3. Tax competition causes ineffective results of authorities’ activity — they try to decrease the tax rates to the level less than the level of their competitors to attract possible taxpayers and investors, which results in the “race to the bottom”. 4. The subjects of RF are able to use the export of tax load. 5. Free competition among the subjects is able to destabilize the state market: regional authorities tend to offer social benefits to their residents only, offer tax benefits to the local capital, make trade barriers

As one can see, tax competition among the subjects of RF has a sufficient number of the advantages and disadvantages. To generalize everything mentioned above we can conclude that there are two methods of implementing tax competition into tax management at the international level as well as at the level of the regions – voluntary and voluntary-forced (Figure 5).

The voluntary method presupposes that the subject independently makes the decision to improve its situation compared with other subjects. It develops various plots to improve its competitiveness and attractiveness for their “own” and “others” taxpayers. The voluntary-forced implementation of competition in taxation is a certain respond to the voluntary competition – the subject has to develop the events to participate in tax competition in

order to keep subject’s taxpayers, develop its competitive advantages. The voluntary-forced implementation of competition in taxation is also possible applying the tools of economic policy of the state, which cause the regions to provide themselves with their own financial resources via competition in taxation.

Figure 5 demonstrates the main means of the state to implement tax competition in Russia. As we have mentioned above, the first reason for competence in taxation in Russia to occur was the transition from administrative-command to market economy, which caused the development of private property. Then political events in the country and geopolitical factors determined the federate structure in Russia and the differentiation of its regions. After that the country became an active actor at

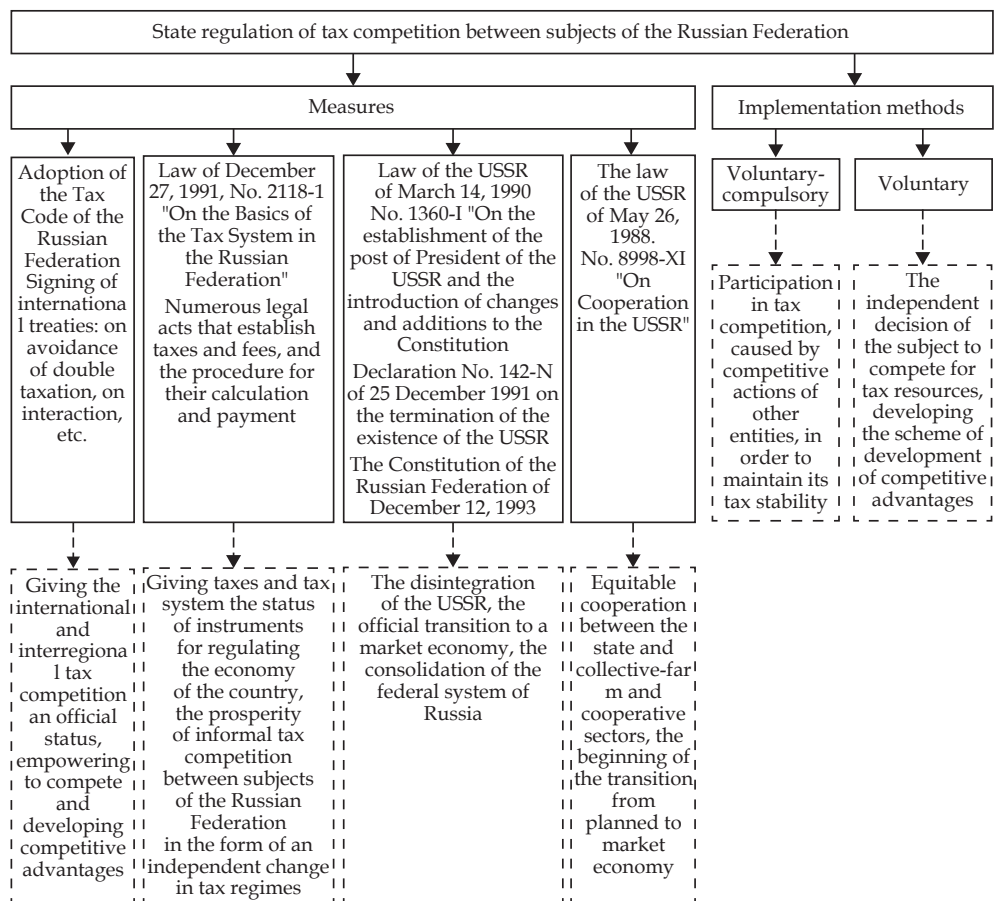


Figure 5. Methods and measures of state regulation of tax competition between subjects of the Russian Federation

the global scene, which was the reason to participate in international tax competition, and the decentralization of financial resources inside the country was the reason for the development of international tax competition.

Competition in taxation among the regions mostly spreads in the countries with the federate structure of the territory due to regions' wider tax authority compared to the authority of a unitary state.

Tax rates, benefits and rewards for all or separate categories of taxpayers, other elements of taxation (taxpayers, the object, tax base, tax period, the order and the ways to pay tax) might be the tools of tax competition. It is advisable also to include into the tools of competition the simplified procedure of taxpayers' registration, and the simplified mechanism of the referral to a certain group to which a favorable tax regime is set.

We can classify the factors of changing the competition in taxation level based on the impact to the social-economic structure of the subject of the Russian Federation in the following way:

- objective (the principally new conditions of functioning are tax-budget reforming which means innovations in tax administration, regional governance organization using the achievements of science and practical experience in various sectors of economy);

- subjective (the decisions of the taxation agencies of the RF regions on providing financial aid to the regions, etc.) [26, p. 148];

- political (the ambitions of regional authorities to receive the advantages to form the tax revenue of the budget and to maximize the budget revenue without special priorities; no interest of the citizens to get and use the information on the part of regional political system functioning influencing the structure and the volume of social benefits financed on the expense of tax revenue) [26, p. 151];

- external (tax policy);

- internal (insufficient development of tax stimulation tools which might attract capital and labor resources to the territory of the RF subject);

- economic (reduction of tangible losses and, consequently, growth of financial activity result indicators; tax and non-tax revenue, transfers among budgets, insufficient stimulation of territory's tax potential growth; reduction of tax risks; optimal tax load determination, improvement of taxes and fees management efficiency; proven application of tax benefits; capital and labor migration; investments);

- social (propensity to enrich by obtaining tax allowances and payments from the budget; state support; forming the environment of human capital development using tax and budget tools; inviting qualified experts; improvement of the tax culture level, etc.).

It is relevant to notice that T. Fild [11] while evaluating tax competition pays his attention to the necessity to distinguish and consider two more opinions – American and European. The author writes that the American and European judgements on the role of state in country's economy are different: the European judgements on tax competition are mostly negative in comparison with the US, which shows in the approach to study the phenomenon and in the relating protection measures. The European scientists and economists have an opinion that the state being a supplier of social benefits is entitled to protect its tax system from the devastating influence of competition in taxation. The American scientists, in turn, think that the volume of state expenses on social purposes demonstrates inefficiency and extravagance, thus tax competition is an essential tool of their decrease and economy development [20, p. 183].

Having pluses and minuses of competition in taxation among regions practically determines the dual nature of its economic potential. The inner potential of tax competition among regions is implemented through the fiscal and regulating functions of taxes. In the process of participating in tax competition these functions are able to interact according to the two plots: either they show simultaneously, or the fiscal function oppresses the regulating function minimizing the competition in taxation to zero. The reason for the first

the more desirable for the regions variant of functions' interaction are the advantages of tax competition, and the second variant is possible when the disadvantages of tax competition occur.

The second plot of tax competition inner potential appearance is highly undesirable and even fatal for the social and economic development of the region. The first variant covers all the positive sides of the competition and makes a positive impact on legal entities and individuals.

The implementation of competition in taxation through the fiscal function results in investment attraction to the region, new employment, infrastructure development, and improving tax revenue. Its implementation through the regulating tax function encourages legal entities to develop small and middle size business and production stimulation. Referring to individuals it will improve savings, individual entrepreneurship initiative, the growth of people's individual income, etc.

The regional factor of the Russia Federation determines most processes in the system of state governance. Regions are the main link in the implementation of social-economic policy of the government. All the principal decisions of the federal center are more or less implemented via regional authorities. The daily interaction of the state with its citizens and most key questions of life support are solved at the regional level. Thus, the regions are the main element of modern Russian state mechanism. Simultaneously, the regions are the main form of economic and social life organization

and the main totality of economic, social and demographic processes that exist in the country are localized there, the whole life cycle of the population is implemented here fully [27, p. 201].

The role given to the regions causes the necessity of their sustainable and efficient social-economic development as very important links in the system of social structure and state governance. The sustainability of the regions is the key condition to provide the national security of the country.

The main tool of governmental regulation of regions' social-economic development practically in all developed countries is tax regulation. The range of application of this tool in different periods of state development depends on their development stage. In the conditions of crisis and economic recession the role of the state and, therefore, of tax regulation increases. The state structure of Russia suggests the existence of three levels of power, so the tax system should also have three stages. The Tax Code of the Russian Federation determines the authority of all three levels of power bodies on taxation, implementation, changes and cancel of taxes. In connection with it there are federal, regional and local taxes in Russia. This distinction of the tax authority among the levels of power is called tax federalism.

The peculiarity of Russian tax budget system is high differentiation of the regions. The brightest examples of differentiated in regions' social-economic indicators are given in Table 2.

Table 2

**Examples of differences in the socio-economic development
of the subjects of the Russian Federation**

The subject of the Russian Federation	Area of the territory, thousand km ²	Population, thousand people	Number of enterprises and organizations	Average per capita monetary income per month, rub.	GRP, million rub.	Incomes of consolidated budgets, million rub.
Moscow	2.6	12 197	1 142 555	54 504	12 808 573	1 552 944.3
Orenburg region	123.7	2 001	40 969	20 724	731 287	90 088.8
Nenets Autonomous District	176.8	43	1 127	66 491	183 699	19 103.0
Republic Buryatia	351.3	978	20 309	22 326	184 815	50 409.6
Chukotsky Autonomous District	721.5	51	1 178	57 310	56 556	21 385.4
Republic Saha	3 083.5	957	26 747	34 205	660 150	172 332.9

As one can see (Table 2), the square of the Republic of Sakha is 1186 times more than the square of Moscow, the number of population is 13 times less than the population of the Republic of Sakha, and the number of businesses and organizations in the Republic of Sakha is 43 times less than in Moscow, per capita money income in Moscow is 1.6 times more than in the Republic of Sakha. Similar situations can be seen comparing the figures of other regions.

Shall we imagine the forms by which use competition in taxation shows. The brightest is vertical tax competition by offering tax benefits. One should remember that application of the regulating function of competition in taxation is used with limits and locally because to be efficient the system of tax authority management having the role of a single and integral structure of forcible and compulsory tax relationships regulation must harmoniously implement an indivisible tax policy which, in turn, is positively taken by the society. Otherwise violation of the tax system unity and increase of tax avoidance may cause losses of tax revenue. It is important to consider the principles of different levels' authority division on the establishment of tax incentives which are used in Russia at present:

1. The right to impose and offer tax advantages (low tax rate, tax incentive, etc.) by one power level: "one tax – one level of power". In other words on power level manages the tax elements. For example, value added tax is the federal tax and goes to the federal budget, corporate property tax is regional and goes to the regional budget, personal property tax is local and goes to the local budget.

2. Dividing the right to state and give tax incentives to several power levels: "one tax – tree levels of power". In this case the tax revenue is divided between the budgets of tree levels of power and each power level is allowed to make its tax advantages. For example, corporate property tax is divided between the federal and regional budgets, and at the regional level the tax rate can be lowered and the investment tax credit can be offered.

3. The right to impose and offer tax incentives on state tax with the simultaneous dividing of tax revenues between the budgets of different levels. For example, the advantages on personal property tax are stated at the federal level, but the sum of state revenue is divided between the regional and local budgets [28, p. 52].

Horizontal competition in taxation can be seen through the means that support investment activity of the state, regions and municipalities. At the same time, the state makes the system of tax incentives to implement prioritized social-economic reforms. In turn, the main task of any state is to form institutional conditions which help to create and save favorable tax climate for investors. To reach this goal the incubators (economic centers) are formed where the organizations of leading economic activities are set up. These centers attract production factors. Concentration of money in the social establishments offering tax preferences provides the formation of the development axes.

The ability to offer tax advantages (incentives) is, no doubt, the main tool of tax regulation allowing to influence the competitive advantages of social establishments aimed to attract investors to their territories [29, p. 100]. It is possible to see the following advantages referred to the regional and local taxes in RF:

1. Deduction of certain tax objects, which have cost number and physical characteristics. Only the state bodies are allowed to offer this advantage.

2. Exemption from taxes to certain categories of taxpayers. Regional and municipal authorities are entitled to offer this advantage.

3. Decrease of tax rates. According to Art. 53 of the Tax Code of RF the authorities of the subject of RF and the local government are entitled to use this right given to them by the state. The example of such an advantage is corporate tax and a simplified system of taxation. In accordance with Art. 346.20 of the Tax Code of RF, the subjects of RF are entitled to offer the differentiated tax rates to the object "income-losses" in the range from 5 to 15 % with

possible variation depending on the category of taxpayers and since 2016 to the object "income" from 1 to 6 %.

4. The change of the legally stated date of tax payment (to the later date by offering an investment tax credit, interest free loan, postponement). In accordance with Art. 63 of the Tax Code of RF the tax authorities of the subjects of RF are entitled to offer this advantage to the citizen interested to obtain it at the place of his/her location coordinated with certain tax authorities [28, p. 52–55].

It is important to pay attention to the dilemma which is the result of the competition in taxation character: on the one hand, it is performed to attract the taxable revenue to the territory of the social establishment, on the other hand – to receive investments and capital as well as the inflow of their owners. According to the theory, reduction of taxes to the minimal size may cause the inflow of capital to the economy of the social establishment and at the same time to attract investments. It is necessary to have a good infrastructure and highly qualified labor resources, which is the result of the social sector development funded by significant tax revenues. At the same time, their decrease to lower than the optimal possible level undermines the tax base and deteriorates the infrastructure, which might mean the outflow of the attracted investments in the nearest future [30, p. 32].

Having considered all the above, one can conclude that at present there is vertical and horizontal competition in taxation in the Russian Federation. Due to the limited and local application of vertical competition, horizontal competition, which has been gathering pace recently, is most relevant. Natural and human resources, the production structure, infrastructure, environmental situation, etc. provide competitive advantages to social establishments. The formation of tax advantages for the taxpayers who operate at the territory of this social establishment has a special role. In connection with this it is important to analyze the competitive position of the subject of the Russian Federation at the modern stage [28, p. 53].

Offering tax incentives is the most relevant tax mechanism to ensure the competitiveness of the region. Russian experience confirms that due to the tax incentives influence the taxpayers tend to move to other regions rather actively. To demonstrate this analysis of granting tax incentives by all the subjects of the Russian Federation was done (Figure 6).

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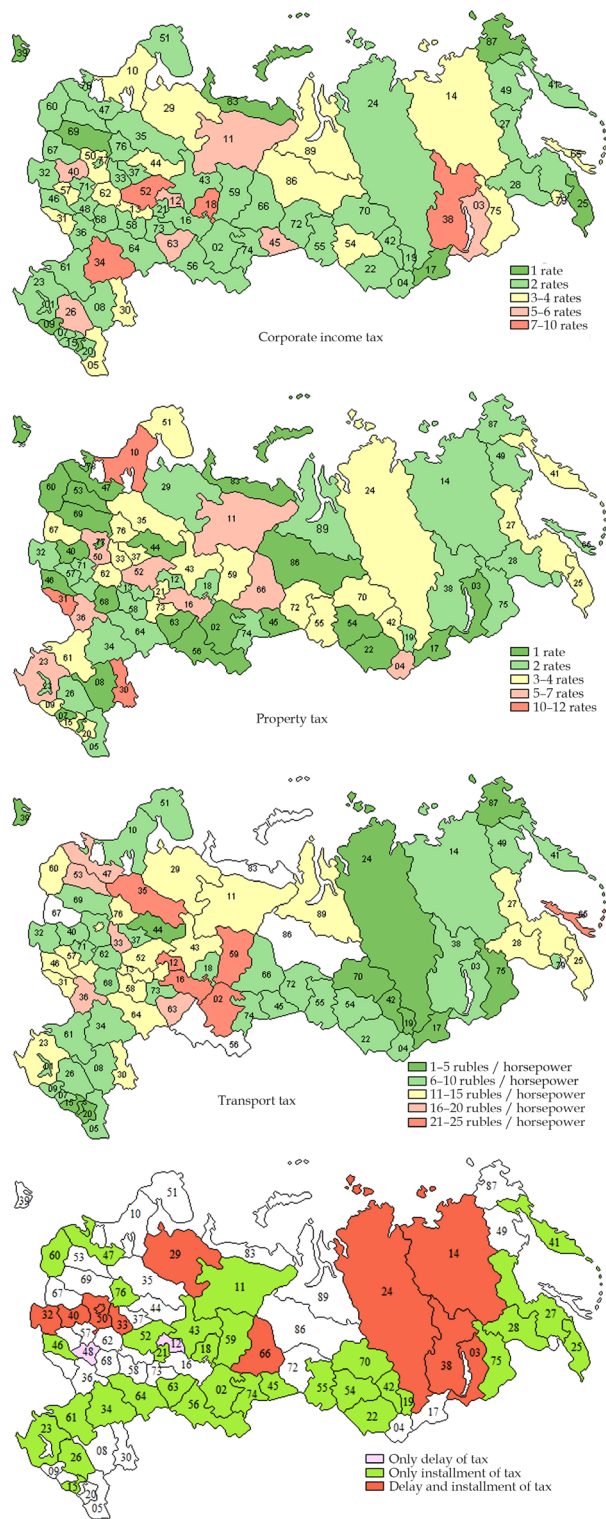


Figure 6. An example of the exercise of authority by the subjects of the Russian Federation on the use of instruments of tax competition in order to ensure the competitiveness of the region

incentives influence the taxpayers tend to move to other regions rather actively. To demonstrate this analysis of granting tax incentives by all the subjects of the Russian Federation was done.

Figure 6 demonstrates the information on the monitoring of the legal acts of RF subjects and shows that the regions have various techniques relating to taxation. Most of the subjects of RF use their rights in taxation to create tax advantages (decrease income tax rate to not less than 4.5 %, use the differentiated scale of cor-

porate tax rate and transport tax rate, offer free interest loans and postponements to pay taxes). At the same time, there are some territories that do not use this right. We must notice that most regions granted the right to use the decreased income tax rate for companies and corporate tax rate to the economies, which make investments. The division of tax rate also depends on the type of economic activity, the share of profit in the investment project which is subject to taxation, the volume of capital investments, etc. [28, p. 53].

Table 3

Codes of subjects of the Russian Federation

Subject name	Subject Code	Subject name	Subject Code	Subject name	Subject Code
Republic Adygea	01	Stavropol Region	26	Omsk Region	55
Republic Altai	04	Khabarovsk Region	27	Orenburg Region	56
Republic Bashkortostan	02	Amur Region	28	Oryol Region	57
Republic Buryatia	03	Arkhangelsk Region	29	Penza Region	58
Republic Dagestan	05	Astrakhan Region	30	Pskov Region	60
Republic Ingushetia	06	Belgorod Region	31	Rostov Region	61
Kabardino-Balkar Republic	07	Bryansk Region	32	Ryazan Region	62
Republic Kalmykia	08	Vladimir Region	33	Samara Region	63
Karachay-Cherkessia Republic	09	Volgograd Region	34	Saratov Region	64
Republic Karelia	10	Vologda Region	35	Sakhalin Region	65
Republic Komi	11	Voronezh Region	36	Sverdlovsk Region	66
Republic Mari El	12	Ivanovo Region	37	Smolensk Region	67
Republic Mordovia	13	Irkutsk Region	38	Tambov Region	68
Republic Sakha (Yakutia)	14	Kaliningrad Region	39	Tver Region	69
Republic North Ossetia	15	Kaluga Region	40	Tomsk Region	70
Republic Tatarstan	16	Kemerovo Region	42	Tula Region	71
Republic Tyva	17	Kirov Region	43	Tyumen Region	72
Udmurt Republic	18	Kostroma Region	44	Ulyanovsk Region	73
Republic Khakassia	19	Kurgan Region	45	Chelyabinsk Region	74
The Chechen Republic	20	Kursk Region	46	Yaroslavl Region	76
The Chuvash Republic	21	Leningrad Region	47	Moscow	77
Altai Region	22	Lipetsk Region	48	Saint Petersburg	78
Transbaikal Region	75	Magadan Region	49	Jewish Autonomous Region	79
Kamchatka Krai	41	Moscow Region	50	Nenets Autonomous Okrug	83
Krasnodar region	23	Murmansk Region	51	Khanty-Mansiysk Autonomous Okrug – Yugra	86
Krasnoyarsk region	24	Nizhny Novgorod Region	52	Chukotsky Autonomous District	87
Perm Region	59	Novgorod Region	53	Yamalo-Nenets Autonomous District	89
Primorsky Krai	25	Novosibirsk Region	54		

Table 4

The use of instruments of tax competition by subjects of the Russian Federation

Subject Code*	Provision of reduced rates		Installment plan	Provision of benefits		Subject Code	Provision of reduced rates		Postponement	Installment plan	Provision of benefits		Subject Code	Provision of reduced rates		Postponement	Installment plan	Provision of benefits	
	CIT	CPT		TT	CPT		CIT	CPT			TT	CPT		CIT	CPT			TT	CPT
31	+	+	-	+	+	78	+	+	-	+	+	+	45	+	+	-	+	+	+
32	+	+	+	+	+	01	+	+	-	-	+	+	66	+	+	+	+	+	+
33	+	+	+	+	+	08	+	+	-	-	+	+	72	+	+	-	-	+	+
36	+	+	-	-	+	23	+	+	-	+	+	+	86	+	+	-	-	+	+
37	+	+	-	+	+	30	+	+	-	-	+	+	89	+	+	-	-	+	+
40	+	+	+	+	+	34	+	+	-	+	+	+	74	+	+	-	+	+	+
44	+	+	-	+	+	61	+	+	-	+	+	+	04	+	+	-	-	+	-
46	+	+	-	+	+	05	+	+	-	-	+	+	03	+	+	+	+	+	+
48	+	+	+	+	+	06	+	+	-	-	+	+	17	-	-	-	-	+	-
50	+	+	+	+	+	07	+	+	-	-	+	+	19	+	+	-	+	+	+
57	+	+	-	+	+	09	+	+	-	-	+	+	22	+	+	-	+	+	-
62	+	+	-	+	+	20	+	+	-	-	+	+	75	+	+	-	+	+	+
67	+	+	-	+	+	15	+	+	-	+	+	+	24	+	+	+	+	+	+
68	+	+	-	+	+	26	+	+	-	+	+	+	38	+	+	+	+	+	+
69	-	+	-	+	+	02	+	+	-	+	+	+	42	+	+	-	+	+	+
71	+	+	-	+	+	12	+	+	+	+	+	+	54	+	+	-	+	+	+
76	+	+	-	+	+	13	+	+	-	-	+	+	55	+	+	+	+	+	+
77	+	+	+	+	+	16	+	+	-	-	+	+	70	+	+	-	+	+	+
10	+	+	-	+	+	18	+	+	-	+	+	+	14	+	+	+	+	+	+
11	+	+	-	+	+	21	+	+	-	+	+	+	41	+	+	-	+	+	+
29	+	+	+	+	+	59	+	+	-	+	+	+	25	+	+	-	+	+	+
83	-	+	-	+	+	43	+	+	-	+	+	+	27	+	+	-	+	+	+
35	+	+	-	+	+	52	+	+	-	+	+	+	28	+	+	-	+	+	+
39	-	-	-	+	+	56	+	+	-	+	+	+	49	+	+	-	-	+	+
47	+	+	-	+	+	58	+	+	-	-	+	+	65	+	+	-	-	+	-
51	+	+	-	+	+	63	+	+	-	+	+	+	79	+	+	-	-	+	+
53	+	+	-	+	+	64	+	+	-	+	+	+	87	+	+	-	-	+	-
60	+	+	-	+	+	73	+	+	-	-	+	+		+	+	-	-	-	-

* The numbers indicate the codes of the subjects of the Russian Federation, presented in Table 3.

Note: "+" – tool used; "-" – tool is not used; CIT – corporate income tax, CPT – corporate property tax, TT – transport tax

Table 4 is made based on the analysis of tax competition tools application. It demonstrates the degree of creating more advantageous conditions for taxpayers by the regions. The indicators of the given table show that there are no regions that do not apply the tools of tax competition. The Tyva Republic takes the least part in the regions' competition for tax resources and uses only one possible instrument.

Conclusions

The research of competition in taxation and its implementation forms among the subjects of the Russian Federation allows coming to the following conclusions:

1. Having in mind the formation of historical and practical prerequisites, the authors studied the origin of scientific thought on regional tax competition which is based primarily on social relation; provided their definition of the concept "competition in taxation" which differs from the existing theories where it is regarded within the frames of the process approach. The authors added their own characteristics to the species classification

of tax competition based on the analogy method.

2. The authors defined that tax competition have gone through several stages of its development ranging from implementation through physical violence to the proper application of the fiscal policy tools.

3. There are not so many forms of competition in taxation implementation for the regions in the existing Russian practice, which limits its full scale application in the territory of the country. The given review of the authorities' regulations on their use of the tax competition tools testifies that there are various positions among the subjects of the Russian Federation on participating in tax competition. Most regions rely on the improvement of investment attractiveness of their territory.

The ultimate aim of the regional competition in taxation is to apply the reserves which improve the indicators of social and economic development, growth of the tax potential and the development of the taxation policy of a certain region as a result of comparing its indicators with other RF subjects.

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WORLD EXPERIENCE AND RUSSIAN PRACTICE OF THE PENSION SYSTEM'S REVENUE FORMATION: MATHEMATIC METHODS OF ESTIMATION

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ABSTRACT

The article is devoted to the methods of revenue formation of the Pension system. Effective functioning of the Pension system in any country depends on the applied methods of revenue formation of the State Pension system. Thus, the problems of the Russian pension system disclosed in the article are caused by the inefficient methods of revenue formation of the Pension Fund of Russia. The theoretical views on conditions that determine the quality of the work of the pension system are reviewed. The methods of revenue formation of State pension systems in different countries of the world and conducted pension reforms are analyzed. The studies evaluating the effectiveness and sustainability of State pension systems usually use mathematical methods and actuarial calculations. Mathematical apparatus applied in the article allowed calculating the formal conditions of balance of the State pension system, considering compliance with the equivalency and compensatory contributions and payments. The publication outlines the mathematical formulas that describe the conditions of equivalence and retribution observance. The study revealed that the methods of revenue formation of State pension systems are social insurance and social security. Social insurance applies the techniques of pension social risks redistributing insurance and social security uses tax tricks redistribution of the National income. The method of social security reduces the motivation of contributors to pay obligatory payments to the State Pension Fund. Therefore, in Russia there is significant evasion. The authors considered using the distribution and accumulation method of revenue formation of the State Pension system. The article demonstrates that, various methods of revenue formation of the State Pension system are actively used in the world

KEYWORDS

Pension, Pension Fund, pension insurance, revenue, tax, grant, tax evasion, mathematical methods, pension accumulation, international experience

HIGHLIGHTS

1. The balance between the pension system revenue and the expenses for pensions is an important characteristics of a national pension systems
2. The stability of the pension system based on the distribution method of forming revenue is ensured by the compliance of the insurance premium tariff with the macroeconomic and demographic conditions of the country's development; the stability of the pension system based on a funded method of forming revenue is ensured by the real annual return of pension savings placed in investment assets

3. The Russian pension system is unbalanced due to the significant scale of evasion from the pension insurance contributions
4. Mathematical calculations have shown that solving the problems of the Russian pension system is possible by increasing the motivation of citizens and organizations to pay the pension insurance contributions; expand the application of the funded method of pension system revenue formation and ensure a real level of return on the assets of pension savings

МИРОВОЙ ОПЫТ И РОССИЙСКАЯ ПРАКТИКА ФОРМИРОВАНИЯ ДОХОДОВ ПЕНСИОННОЙ СИСТЕМЫ: МАТЕМАТИЧЕСКИЕ ПРИЕМЫ ОЦЕНКИ

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АННОТАЦИЯ

Статья посвящена исследованию методов формирования доходов пенсионной системы. Эффективность функционирования пенсионной системы любой страны мира во многом определяется применяемыми методами формирования доходов национальной пенсионной системы. Поэтому раскрытые в статье проблемы российской пенсионной системы в немалой степени вызваны неэффективным применением методов формирования доходов Пенсионного фонда России. Рассмотрены теоретические взгляды различных авторов на условия, определяющие качество работы пенсионной системы. Проанализированы методы формирования доходов национальных пенсионных систем, применяемые в различных странах мира, и проводимые в них пенсионные реформы. Выявлено, что исследования, посвященные оценке эффективности и устойчивости функционирования пенсионных систем обычно опираются на математические методы, а также актуарные расчеты. Примененный в статье математический аппарат позволил рассчитать формальные условия сбалансированности национальной пенсионной системы с учетом соблюдения эквивалентности и возмездности взносов и выплат. В публикации изложены математические формулы, описывающие условия соблюдения эквивалентности и возмездности. В ходе исследования было выявлено, что методами формирования доходов пенсионной системы является социальное страхование и социальное обеспечение. Социальное страхование применяет страховые приемы перераспределения страхуемых в пенсионной системе социальных рисков, а социальное обеспечение использует налогово-бюджетные приемы перераспределения национального дохода. При этом метод социального обеспечения снижает мотивацию плательщиков уплачивать обязательные платежи в государственный пенсионный фонд. Поэтому в России наблюдаются значительные масштабы уклонения от их уплаты. Авторами рассмотрено использование распределительных и накопительных методов формирования доходов национальных пенсионных систем. В статье продемонстрировано, что в странах мира активно используются различные методы формирования доходов национальных пенсионных систем, опыт которых может быть востребован в России.

КЛЮЧЕВЫЕ СЛОВА

Пенсия, пенсионный фонд, пенсионное страхование, доход, налог, дотация, уклонение от уплаты налогов, математические методы, пенсионные накопления, международный опыт

ОСНОВНЫЕ ПОЛОЖЕНИЯ

1. Важнейшей характеристикой национальных пенсионных систем является сбалансированность между собранными доходами и расходами на выплату пенсий
2. Устойчивость пенсионной системы, основанной на распределительном методе финансирования, обеспечивается благодаря соответствию тарифа страхового взноса макроэкономическим и демографическим условиям развития страны; для пенсионной системы, основанной на накопительном методе, устойчивость определяется обеспечением реальной годовой доходности пенсионных накоплений, размещенных в инвестиционные активы
3. Российская пенсионная система является несбалансированной из-за значительных масштабов уклонения от уплаты страховых взносов
4. Проведенные в ходе исследования математические расчеты показали, что решение проблем российской пенсионной системы возможно за счет повышения мотивации граждан и организаций к уплате страховых взносов, а также за счет расширения применения накопительного метода финансирования и обеспечения реального уровня доходности активов пенсионных накоплений

Introduction

Russian Pension system is in crisis. The average month pension size in 2016 was 180\$ US, it doesn't meet the requirements of the Convention of the International Labor Organization of June 4, 1952 No. 102 "On Minimum Standards of Social Security", where the size of the pension is 40 % of the prior salary of a pensioner. The average pension in Russia in 2016 was 34 % and it has not reached the required size for the last 20 years. Meeting social responsibilities in social sphere is getting more complicated by the fact that recently about a half of Russian Pension Fund revenue is made by the grants from the federal budget of Russia, but not the fund's own finance, and at the same time a significant extent of the shadow economy takes place as well as evasion from payment of pension insurance contribution caused by the lack of payers' trust to the State pension system. According to experts' opinion, about a half of payers hide their income from taxation on contributions to compulsory pension insurance. The efficiency of State pension system functioning depends mostly on the applied methods of generating revenue.

Literature review

The issue of national pension system revenue formation is considered in the works of various authors. Taking into consideration the fact that the mechanism of

social risk management is the basis of national pension system, a number of works are devoted to the methods of social risk management. Having endogenously inherent social risks creates the necessary prerequisites for designing the ways of their assessment, measurement, decrease and prevention. The totality of these methods forms a mechanism for managing social risks. This mechanism is based on the condition that one can determine more or less veraciously the material damage as a result of social risks implementation. V. D. Roik says, "The risk nature and the degree of its probability allow working out the system of preventive prophylactic measures to reduce the risk and to evaluate the necessary types and scale of the compensation means – compensation payments, replacing the lost salary" [1, p. 30]. Similar problems are considered in the works by T. A. Fyodorova [2, p. 82–83], D. Y. Fedotov [3, p. 386–395].

A significant number of foreign publications are devoted to considering the methods of national pension system revenue formation in various countries. N. Barr writes about the international trends of national pension system development [4]. N. Barr and P. Diamond criticize the World Bank activity on the promotion of pension reforms implementation in various countries [5]. The number of works demonstrates the peculiarities of pension systems functioning in certain countries. B. Bothworth and G. Burtless worked

on the methods of national pension system balancing applied in the USA [6]. The studies of pension fund investments was carried out in Australia by A. Basu and M. Drew [7]. Certain aspects of pension funds formation and management in Chile are considered in the research of S. Bewrstein, G. Larrain, and F. Pino [8].

The analysis of pension system functioning on order to evaluate their efficiency and the sustainability of their functioning usually relies on mathematical methods and actuarial calculations. Application of mathematical methods in pension fund revenue formation is demonstrated in the publications by A. P. Arkhipov [9], H. Gerber [10], G. I. Falin [11], H. Ferr, S. Jokisch, M. Kallweit, F. Kindermann, L. J. Kotlikoff [12].

At the same time modern studies focus on the research of distributive and accumulative methods of financing, and are mostly limited by describing the main characteristics of certain pension insurance systems [13–16], which might be enhanced by providing the standard conditions of a certain level of a pension system balance with the condition of comply with the equivalence and reimbursement of contributions and payments and applying the mathematical apparatus as shown below.

Applied methods and approaches

The formation of the State Pension Fund is caused by the need to redistribute the consequences of social risks due to loss of labor income of economically active population. At present there are sev-

eral mostly spread methods of social risk management, two of which are the alternative methods shown on Figure 1.

The difference between the methods of social insurance and ones of social security shows in the fact that social insurance has key insurance signs, which often do not exist in the method of social security that is based on tax-budget ways to finance social expenses. Because of that the methods of social risk management differ according to the degree of insurance sign implementation (Table 1).

The only insurance characteristic, which exists in both social security and social insurance, and gives the opportunity to the mutual exchange of the given methods of social expenses funding is the probabilistic character of the start for the ground for social payments. In both cases not all citizens implement their right to receive social payments, but only several people. This common characteristic is caused by the essence of the objects of these forms of social finance, which is social risk with its random character of implementation.

Dividing the concepts of social insurance and social security as the alternative methods of financing social expenses by the state requires to divide the methods of resource mobilization for their implementation. The first is based on the insurance principles, and the second is based on the principles of taxes. The main financial source of the compulsory social insurance system is insurance premium. This differs the methods of compulsory insurance from social security, which uses the

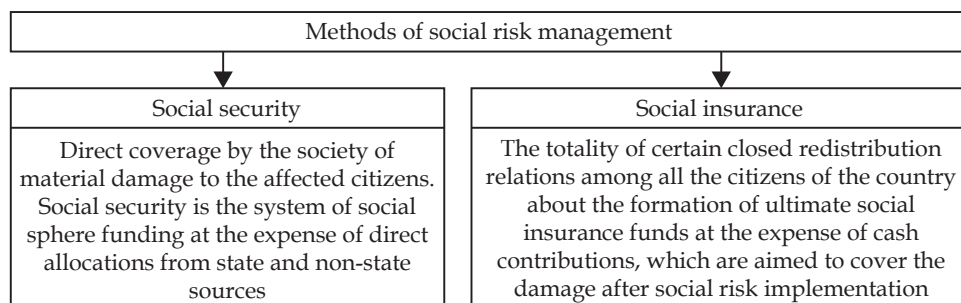


Figure 1. Comparison of the character of insurance sign implementation in social security and social insurance

tax mechanism of revenue mobilization, since the economic nature of insurance premiums differs from taxes and has not a fiscal, but compensation character, and is a deferred part of the wage aimed at the coverage of insurance cases.

The process of social risk management exists in a more or less degree at most studies of the general reproduction process.

The process of reproduction includes four stages of a new value creation:

production, distribution, exchange, and consumption. The relations of risk management take place at the stages of production, distribution, and consumption. Figure 2 demonstrates the scheme of creating and redistribution of value in the process of social risk management. The reproduction process is shown at Figure 2 in a reduced variant, the stages of cost movement which are not connected with social risk management are excluded.

Table 1

Comparison of the character of insurance sign implementation in social security and social insurance

An insurance sign	Social insurance	Social security
The distribution of material damage in time and space	Yes: There is damage due to social risks; it distributes among all citizens paying insurance (distribution in space), and during the whole period of pensioner’s work (distribution in time)	No: There is no redistribution, the damage is covered by the state
Recurrence of financial payments	Yes: The working citizens are returned the deferred part of the product made by them	No: There is one way moving of finance from the financial aid giver (the state) to its receiver
Presence of the main insurance subjects	Yes: Insurance subjects (insurant, insurer, insured) take an obligatory part in the system of social insurance	No: Two subjects are enough for the organization of social security relations – the representative of a social payment, and the receiver of a social payment
Probabilistic character of the start for the ground for social payments	Yes: The probabilistic character is the feature of the given management method object – social risk	No: The probabilistic character is the feature of the given management method object – social risk

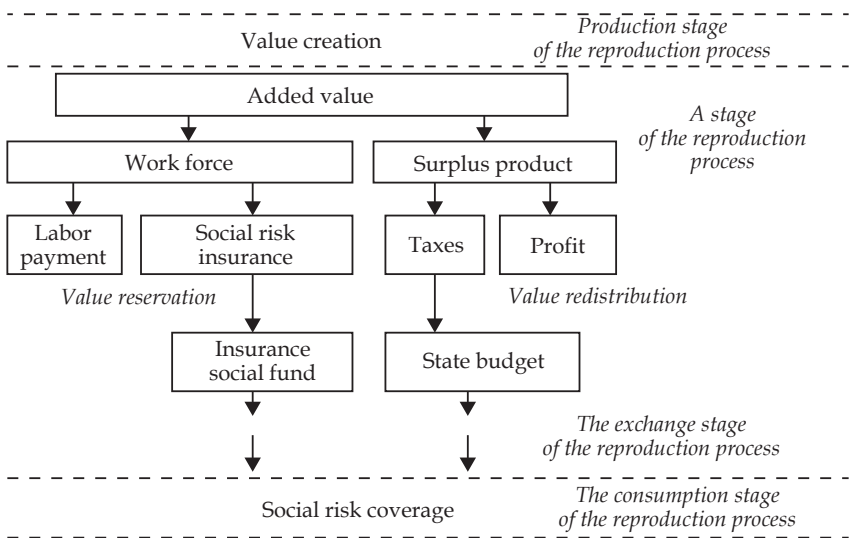


Figure 2. The chart of creation and redistribution of value in the process of risk management

The reproduction process starts with the production stage, when the added value is created in all production and social spheres of the state; the aggregate value added in the process of goods, services, and work production makes gross national product of the country. Social risks are endogenous to the carriers — the hired workers, whose labor ability is a factor of production. Thus, labor as a factor of production, which takes part in creating a new value, brings social risks to the production stage of the reproduction process. This stipulates the necessity of social risk management system organization, which usually includes preventive measures aimed to decrease the level of social risks having professional character at this stage of the reproduction process.

Social risks are implemented in the lives of their carriers with a more or less probability degree. So, the relations aimed at social risk management are built at the stage of reproduction process distribution during value redistribution relations. The value added at the production stage is created at the expense of estrangement of a part of the necessary product from the produced product value. The part of the necessary product is intermediate consumption at the production stage (raw material cost, equipment depreciation, etc.). In turn, the added value is distributed between the remained part of the production costs, covering labor ("workforce" at Figure 2), and added product.

The established social risk management methods (social security and social insurance) arrange the process of value redistribution in different ways to cover social risks. Social insurance method means redistribution of risks among their carriers based on the reservation of a part of the added value in an insurance social fund.

The alternative method of social security is based on redistribution of revenue: here the added value primarily distributed among the participants of the production process is subject to the distribution through taxes by the state budget mechanism.

The relation of social risk management do not occur at the stage of the re-

production process, because a social risk carrier — a hired worker does not take part in the relations that occur during the process of product buying and selling.

Consumption of the added value takes place at the stage of reproduction process consumption. One of the consumption forms is social risk coverage. The considered methods of social risk management apply the alternative technologies of social risk coverage. Social insurance method means individual measurement and calculation of risk level determined by the individual characteristics of its carrier (the qualification of a hired worker and his labor productivity). The method of social security means equalizing procedure of social risk measurement and calculation, which is covered from the budget at the expense of the collected taxes.

The system of Russian compulsory pension insurance is grounded on the combination of both social security and social insurance methods. It is demonstrated by the fact that a part of Russian Pension Fund revenue comes in a form of insurance premiums (by the social insurance method), and another part comes in a form of grants from the federal budget of Russia, which, in turn, is formed at the expense of the tax sources (by the social security method). There are two ways to form the insurance premiums that go to the Pension Fund of Russia: distributive and cumulative.

According to the distributive way funding of pension payment is done at the expense of insurance premium paid in the same period, and its balance as a mathematical construction can be expressed with the following formula:

$$Sb_N + (Su) = Sw_N + (T), \quad (1)$$

where Sb_N — the volume of pension payments in period N ; Su — the surplus of receipts over payments; Sw_N — the volume of premiums in period N ; T — the surplus of payments over receipts.

The amount of old age pension payments in the period is calculated on the formula

$$Sb_N = \sum_{j=N-t-m}^{N-t} \sum_{i=0}^{W_j} \left(\sum_{k=N-t-m}^N PR_{i,k} I_{k,N} \cdot A \right), \quad (2)$$

where j – the years of payers' birth; $N - t - m$ до $N - t$; m – the number of ages from t to 100; t – a generally established age of old age pension assignment; W_j – the participators of j year of birth; I – the payer of j year of birth; $PR_{i,k}$ – annual remuneration fund I of a payer in the year k ; $I_{k,N}$ – indexation of contributions k of the year in year N ;

$$\sum_{k=N-t-m}^N \overline{PR_{i,k} I_{k,N}} \cdot A -$$

the amount of old-age pension payments to the participant in the period N ;

$$\sum_{i=0}^{W_j} \left(\sum_{k=N-t-m}^N PR_{i,k} I_{k,N} \cdot A \right) -$$

the amount of old-age pension payments to the participants j of the year of birth in the period N .

At the time N participants make contributions in the amount of, calculated with the formula:

$$Sw_N = \sum_{j=N-t}^N \sum_{i=0}^{W_j} PR_{i,k} Rst_j, \quad (3)$$

where $PR_{i,N}$ – annual remuneration fund i of an insured person in a given year N ; Rst_j – an insurance contribution rate according to the distribution component for i participant j of the year of birth; W_j – the participants paying N ;

$$\sum_{i=0}^{W_j} PR_{i,k} Rst_j -$$

the sum of contributions from participants j of the year of birth.

The insurance premium rate is determined on the basis of a sufficient level of income compensation with socially determined period of contributions and payments according to the formula:

$$Rst_j = \frac{A\bar{m}}{\bar{n}}, \quad (4)$$

where Rst_j – payer's contribution rate j of the year of birth; A – a sufficient level of income compensation; \bar{m} – the average period of payments; \bar{n} – the average period of contributions.

In the conditions of the balanced distribution method of financing the value Su and T of the formula (1) are absent, then we put data Sb_N from (2) and Sw_N from (3)

into (1) with the change Rst_j for the value from (4) and receive the formula:

$$\begin{aligned} \sum_{j=N-t-m}^{N-t} \sum_{i=0}^{W_j} \left(\sum_{k=N-t-m}^N PR_{i,k} I_{k,N} \right) &= \\ &= \sum_{j=N-t}^N \sum_{i=0}^{W_j} PR_{i,k} \frac{\bar{m}}{\bar{n}}. \end{aligned} \quad (5)$$

So, formula (5) allows determining the conditions of resources provision for payments under the influence of external factors. In terms of the stable demographic structure (constant value of the demographic burden of old age pensioners) the volume of payments should match the fund of wage, multiplied by the ratio of the period of payment implementation to the period of contribution implementation. Macroeconomic changes result in the decrease of wage fund in economy, and the sum of coming contributions might be compensated by increasing the contribution rate or decreasing the average pension payment, with the changes of the corresponding parameters shown through the formula (5) change.

In terms of a constant real size of the wage formula (5) will be

$$\frac{\sum_{j=N-t-m}^{N-t} \sum_{i=0}^{W_j} \square}{\sum_{j=N-t}^N \sum_{i=0}^{W_j} \square} = \frac{\bar{m}}{\bar{n}}. \quad (6)$$

Formula (6) characterizes the demographic aspect of pension insurance system sustainability based on the distributive method of funding, i.e. the coefficient of demographic support for the elderly should match the average repayment period to the contribution period. The growth of life expectancy ($m < /s >$) can be compensated by the increase in the average contribution period (\bar{n}), according to the right-hand side of formula (6). The increase of payments due to the growth in the number of pensioners ($\sum_{j=N-t-m}^{N-t} \sum_{i=0}^{W_j} \square$) needs to change the number of the payers correspondently ($\sum_{j=N-t}^N \sum_{i=0}^{W_j} \square$) with the unchangeable level of rate to provide formula (6) or to change the insurance contribution rate. It is necessary to notice that economically insurance payments are a form of withdrawal of a part of wages, which provides the delayed consump-

tion in connection with the onset of the inevitable risk of disability due to old age, disability, or loss of breadwinner. In connection with this their growth conditioned by the decrease in the number of workers related to the number of receivers due to the demographic reasons leads to the economically not grounded growth of labor costs which contradicts modern economic situation in Russia.

On the other hand, solving the problem of Russian Pension Fund disbalance, which is caused by demographic reasons, leads to the decrease of correspondence between pension payments and former individual incomes. These circumstances show the inner contradictions characteristic to the distributive method of financing.

Generally negative influence of macroeconomic and demographic indicators on the maintenance of pension insurance system provision based on the distributive financing method by its own means might be changed by the change of the parameters, i.e. by implementing formula (5) or by increasing the level of involvement of the insurance payers, decreasing the share of hidden and mixed incomes.

At the stage of the development of compulsory pension insurance the leading role of the distributive method of financing was conditioned by the favorable macroeconomic and demographic situation characterized by the growth of the number of payers, real wage, a high coefficient of pensioner demographic maintenance. As notices E. V. Ageeva, aging of the world population is caused by the result of two long-term trends: the decrease of birth and the increase of the average life expectancy, which causes the second “demographic transition”, connected with forming the new model of balance in the age structure of the population with the increase of the gap between biologic and “social-economic” aging [17, p. 23]. The rise of labor productivity and increase of the payroll fund in the GDP structure do not overlap the negative impact of the changes, which leads to insecurity of distributive pension systems with their own resources, need for external stabilization donations, the opportunities to use which are limited in the

conditions of budget reduction and due to economy development cyclicality.

The cumulative method is different from the conditions of compulsory pension insurance system balance, based on the distributive method of funding, which requires that the coming insurance premiums correspond pension payments. The cumulative method is characterized by the sustainability of the corresponding system of pension insurance, which is determined by the individual correspondence of the premiums paid and the investment income received to the sum of the pension payments, when there is a risk of decrease of the real pension payment amount or the lack of funds as a result of low investment return in the payment portfolio, which can be confirmed by the calculation.

In this case the amount of individual accumulative pension payments is calculated by division of the accumulated by the time of reaching the age of pension appointment amount of pension savings and investment income for the statistically established expected period of payments.

The years’ volume of individual funded pension payments in the first year of receiving is determined with the formula:

$$P_1 = \frac{S_0}{T},$$

where P_1 — is the amount of funded pension payments in the first year; S_0 — is the amount of the pension savings at the moment of payment establishment; T — is the expected period of pension payment in years.

The individual volume of pension savings taking into account the investment income in a year can be calculated by the formula:

$$S_1 = (S_0 - P_1)I_1 = \left(S_0 - \frac{S_0}{T}\right)I_1 = S_0 I_1 \left(1 - \frac{1}{T}\right),$$

where S_1 — is the amount of pension savings at the time of determining the volume of payments in the second year; I_1 — is the return on investment in pension savings in the first year.

Then the volume of payments in the next year is determined by the formula:

$$P_2 = \frac{S_1}{T-1} = \frac{S_0 I_1}{T}.$$

The individual amount of pension savings taking into account the investment income in two years from the moment of appointment of the funded pension can be calculated by the formula:

$$S_2 = (S_1 - P_2)I_2 = \\ = \left(S_0 I_1 \left(\frac{T-1}{T} \right) - \frac{S_0 I_1}{T} \right) I_2 = S_0 I_1 I_2 \left(1 - \frac{2}{T} \right),$$

where S_2 – is the individual amount of pension savings, taking into account investment income two years after the appointment of a funded pension; I_2 – return on investment pension savings in the second year.

By analogy, the volume of payments in year N is calculated by the formula:

$$P_N = \frac{S_{N-1}}{T-N} = \frac{S_0 I_1 I_2 \dots I_{N-1}}{T-N} = \frac{S_0 \prod_{z=1}^{N-1} I_z}{T-N}.$$

The individual volume of pension savings taking into account the investment income in a period of N years from the moment of appointment of a funded pension can be determined by the formula:

$$S_N = (S_{N-1} - P_N)I_N = \\ = S_0 I_1 I_2 \dots I_N \left(1 - \frac{N}{T} \right) = S_0 \prod_{z=1}^N I_z \left(1 - \frac{N}{T} \right).$$

At the end of the expected period of funded pension payment, the entire amount of individual savings and investment income is converted into payments, according to formula:

$$S_T = S_0 \prod_{z=1}^T I_z \left(1 - \frac{T}{T} \right) = 0.$$

Thus, the correspondence of the individual amount of pension savings and investment income to the amount of pension payments makes up the precondition for ensuring the financial stability of the funded pension insurance system. However, A low level of investment return may lead to a decrease in the purchasing power of pension payments or inadequate funds while maintaining the level of payment.

The parameters which determine the sustainability of the pension system based on the cumulative method, as N. Y. Borisenko [13, p. 64] writes, are the pension

contribution rate, the rate of return on the invested assets, the ratio of the number of persons paying contributions, and the recipients of pension payments, according to the formula:

$$tVL + rN = WP + \Delta N,$$

where t – is pension contribution rate; V – is the average wage in a year; L – the general number of workers; r – rate of return on invested assets; N – pension reserve; W – average annual pension; P – the general number of pensioners; ΔN – increment of pension reserve.

The increment of pension reserve is caused, on the opinion of N. Barr [18], by the fact that the demographic changes cause reduction of manufacturing, decrease of contributions received, and change in the ratio of supply and demand either in the commodity market or in the securities market.

The noted circumstances demonstrate the lack of direct influence of demographic changes on them from the position of maintaining the sustainability of pension systems, and lead to the problem of ensuring the real yield of pension assets.

The system of pension insurance based on the cumulative method has the following characteristics [16, p. 14; 19, p. 21]:

- a low level of political risks;
- taking into account contributions and investment income, while investment income plays a very important role in securing future payments, since it should not only protect pension contributions from the effects of inflation processes, but also ensure real profitability;
- a high level of motivation to pay contributions in full and on time;
- forming resources to provide long-term investments;
- involving the population into the process of decision-making on contribution management;
- imposing the risks of losing a part of capital in investing or a lack of savings for the future payments on the participants;
- the opportunity of transferring the obtained pension rights through professions, branches and countries in the conditions of dynamic developments of international mobility on the labor market.

This is the reason why funded pension systems face the additional risks which are not characteristic of the distributive systems. They are such risks as the risks connected with the inadequate management of pension savings, with the cyclical nature of investment processes, with a change in the actuarial value of pension annuities. None, even the most perfect system of insurance can protect a worker from the risk of a changing real rate of return on pension assets. Among other things, administration costs of the funded pension system are much higher than the costs of managing the distribution system.

The funded system of pension insurance requires regulating the procedure of attracting and informing the participants about the opportunities and consequences of their choice including the use of standard information disclosure measures which consider also low educated people. The information is often given in the legal language and is not clear to the participants of the system. This makes the choice of the pension saving investment more difficult [20, p. 21].

Applying the cumulative method needs to introduce individual saving accounts, receiving real investment yield, working out the mechanism of investment risk decrease, and the need for minimizing investment costs, which requires working out the mechanism of pension saving management.

Methods of financing pension insurance are refracted through the prism of social policy, conceptual approaches and the role of compulsory pension insurance, especially the formation of rights and determination of payments in various countries of the world.

Analysis of the results

The considered methods of social risk management are applied in different ways in pension systems of Russia and other countries. This leaves an imprint on the nature of functioning of financial relations in national pension systems. It is possible to see the differences in providing the balance of national pension systems.

National systems of guaranteed pension protection solve the tasks of providing some guaranteed amount of payments to maintain a minimum standard of living at the expense of the state budget. One can distinguish the following types of payments:

- basic pensions – are established in the following amounts: fixed or dependent only on the number of years of contributions payment, while additional sources of income do not influence the amount of payment;

- targeted pensions – are paid at a higher rate to less well-off recipients and to a lesser extent to recipients with large income, and certain types of income are taken into account;

- minimum pensions – are established depending on the amount of payment within the insurance level, provided that contributions are paid within a certain period.

The insurance level is to guarantee a certain payment rate of lost income replacement (or the achievement of desired income in separate countries) in the following forms:

- established payments – the amount of the pension payment depends on the number of years worked, deductions and individual earnings during the work;

- established contributions – the size of the pension payment is determined based on their amount of contributions paid and investment income;

- the system of pension points – individual earnings, taking into account the payment of contributions, are converted annually into pension points, the amount of payment is determined by multiplying the sum of points by the cost of a point in the year of applying for a pension;

- savings account – the amount of the pension depends on the amount of contributions paid and their indexation on the level of inflation, GDP growth or real wages that go to the flow of payments;

- the established credit – the size of payment is established by the government, which depending on age defines the norm of deductions.

Table 2

**Distribution of the number of schemes used to finance pension payments
by the regions of the world**

Typological feature	Region/ Institutional feature							
	OECD with high income		Eastern Europe and Central Asia		Latin America and the Caribbean		Middle East and North Africa	
	govern-mental	private	govern-mental	private	govern-mental	private	govern-mental	private
<i>The distribution level</i>								
Basic pensions	9	–	4	–	1	–	–	–
Targeted pensions	20	–	4	–	8	–	–	–
Minimum pensions	8	–	7	–	–	–	9	–
<i>The cumulative level</i>								
Established payments	15	3	5	–	2	–	10	–
Established contributions	1	3	–	7	–	9	–	–
The system of pension points	3	–	3	–	–	–	–	–
Saving accounts	1	–	2	–	–	–	–	–
The established credit	–	1	–	–	–	–	–	–

The analysis of the levels and types of pension payments funding in various countries¹ (Table 2) shows that the state pension system solves the tasks of providing social stability and maintenance of a certain level of income of poor people with respect to the average wage in a certain country.

In OECD countries, Latin America and the Caribbean the level of incomes is high – mainly due to targeted surcharges; in the countries of Eastern Europe and Central Asia, the Middle East and North Africa the income is high at the expense of fixed payments. The level of payments in relation to the average wage in the regions of the world varies up to 50 % re-

gardless of the level of economic development, however, a higher level of income support prevails in higher-income OECD countries (Table 3).

Table 3

The maximum levels of pension payments within the framework of state pension provision in relation to the average wage in the economy by regions of the world

The indicator	The region			
	OECD with high income	Eastern Europe and Central Asia	Latin America and the Caribbean	Middle East and North Africa
Distribution level, % of average salary				
Up to 20	3	5	1	2
20–30	7	4	5	4
30–40	10	1	1	2
More than 40	3	2	0	2
The amount of payment for employees with full employment history, %				
Up to 20	1	5	1	2
20–30	7	4	4	4
More than 30	16	1	3	4

Note: The table is compiled according to the World Bank data [21, pp. 21–25].

¹ The analysis is based on the following countries: OECD countries with high income - Australia, Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Japan, Luxembourg, Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, Japan; countries of Eastern Europe and Central Asia – Bulgaria, Hungary, Latvia, Lithuania, Poland, Slovakia, Turkey, Czech Republic, Croatia, Estonia; countries of Latin America and the Caribbean – Argentina, Dominican Republic, Colombia, Costa Rica, Mexico, Peru, El Salvador, Uruguay, Chile; the countries of the Middle East and North Africa - Algeria, Bahrain, Djibouti, the Arab Republic, Egypt, Jordan, the Islamic Republic, Iran, Yemen, Libyan Arab Republic, Morocco, Tunisia. In the case of using more than one scheme in the national compulsory pension insurance system, accounting is carried out for each scheme. Note: the table was compiled according to the World Bank data [21, p.13–14].

There are the schemes with the established payments in the frames of the compulsory insurance level (Table 2). It is necessary to notice that the difference of the schemes based on the distributive method of funding is in the order of pension rights fixing. In general the amount of the pension depends on the length of employment history, payment of contributions, and the amount of individual income. The degree of equivalence of the really paid contributions to the amount of payments is determined by the social policy measures implemented in each country.

The analyzed schemes with the established methods of insurance level are grounded on the cumulative method of funding. The amount of the pension payment depends on the amount of contributions paid or on the amount of the saved capital on the investment accounts by the end of the working activity. In Eastern Europe and Central Asia they add the scheme based on the distributive method with the exception of several countries such as Slovakia, Turkey, and the Czech

Republic. These schemes are basic in the countries of Latin America and the Caribbean, except Costa Rica and Uruguay. Provided that the positive real yield to the savings is ensured, the scheme ensures full equivalence of the contributions paid to the amount of pension payments. The dynamics of the average in the region pension net replacement rate, depending on the level of income (Table 4), indicates their higher values for low individual earnings, which is achieved through the use of schemes of state co-financing.

The decline in replacement as income increases is related to the establishment of a salary ceiling for the calculation of pensions in order to ensure the stability of the expenditure structure and to limit the growth of the compulsory insurance level of pension systems with the exception of the countries in the Middle East and North Africa, where the change in the replacement rate is almost linear.

It should be noted that the net replacement rates within the average level of individual income in the economy by

Table 4

Net norms for replacing earnings with pensions, depending on the level of income for compulsory pension programs for men, share % of pre-retirement income

The indicator	Individual earnings relative to the average					
	0.5	0.75	1	1.5	2	2.5
<i>OECD countries with high income</i>						
Average value	85.7	73.1	67.9	62.6	57.7	52.8
Standard deviation	15.7	16.5	19.3	23.7	25.6	26.6
Minimum value	61.4	47.0	36.6	27.4	21.9	18.1
Maximum value	125.0	115.0	109.8	105.6	104.2	100.1
<i>Countries in Eastern Europe and Central Asia</i>						
Average value	78.1	75.1	73.3	71.4	67.0	62.8
Standard deviation	17.0	14.9	14.8	17.5	15.4	13.7
Minimum value	58.2	59.4	58.2	42.9	35.3	31.0
Maximum value	113.2	106.7	103.3	99.9	92.6	81.8
<i>Countries in Latin America and the Caribbean</i>						
Average value	87.9	72.3	66.0	60.6	57.5	55.4
Standard deviation	31.3	29.1	29.6	27.1	23.3	20.9
Minimum value	50.4	43.4	39.3	37.3	31.6	32.6
Maximum value	125.1	125.3	125.4	110.8	103.2	103.2
<i>Countries in the Middle East and North Africa</i>						
Average value	90.5	87.5	88.0	87.4	86.7	84.7
Standard deviation	26.2	24.2	24.1	22.4	22.2	23.6
Minimum value	48.7	42.8	43.4	44.7	45.3	44.6
Maximum value	141.9	124.2	124.2	126.5	129.5	131.3

Note: The table is compiled according to the World Bank report [21, p. 51–52].

periodic payments exceed in almost all countries the proposals of the 102nd International Labor Organization Convention on Minimum Standards of Social Security, with the exception of Ireland.

Compulsory insurance pensions under various schemes are aimed at the equivalent of length of service and income replacement of individual pre-retirement income, the levels of which are predetermined by the importance of social policy and the economic conditions of a particular country.

Within the insurance level, mandatory pension insurance schemes are based on the distribution method of financing except for Australia, Argentina, the Dominican Republic, Colombia, Mexico, Peru, El Salvador, Chile. In Denmark, Sweden, Bulgaria, Hungary, Latvia, Lithuania, Poland, Croatia, Estonia, Costa Rica, Uruguay, the pension insurance system includes a component based on a cumulative method of financing.

Prevailing of the cumulative method of funding in the systems of compulsory pension insurance caused reforming of national pension systems of the developed and developing countries in terms of changing macroeconomic, demographic, and social conditions. R. Holzmann [16, p. 2] writes that the consequences of the global financial crisis have led to the reassessment of the forecast for the development of world pension systems and approaches to their reform.

Changing approaches to the policy of reforming pension systems is determined by the following factors:

- the objective need for reforms due to population aging and increase in retirement age;
- the lessons learned from the global financial crisis;
- the evaluation results of the consequences of the cumulative schemes implementation in terms of the real investment return level and the fiscal limitations of financing the transition period deficit.

In the OECD high-income countries, compulsory pension insurance reforms were parametric in nature, and consisted of lowering the threshold for assessing

contributions, increasing the contribution period, encouraging a later application of the person for the appointment of a pension, raising the retirement age, in order to ensure sustainability, which was achieved in some countries. In a number of countries, saving schemes were introduced with a personalized (individual) account of the contributions paid and their subsequent use for payment to current recipients. This innovation was realized in the second half of the 1990s in Italy, Latvia, Poland, Sweden, Eastern Europe and Central Asia.

The global economic crisis of 2008 allowed the world community to draw certain conclusions regarding the reform of pension systems:

- the fall in GDP below the pre-crisis level and the prices of assets of pension funds attract financial losses of pension systems;
- the budgetary consequences of the crisis make it difficult to finance the costs of the transition period and the introduction of cumulative elements. Problems in the balance of cash flows increase the budget deficit and the amount of public debt in the euro area, which are limited under the Maastricht Treaty. It does not take into account the fact that a clear increase in the current debt reflects a decrease in the implicit future obligations of the distribution pension systems and in a number of countries resulted in the diversion of assets from accumulative pension schemes. In Lithuania, the contribution rate has been reduced from 5.5 % to 2 in 2009 and 2010, with a subsequent increase to 6 % in 2012–2014 [22, p. 163];
- falling prices for assets of the investment portfolio allowed to expand the methodology for managing the life cycle of the investment portfolio, restricting the circulation of assets in the annuity to prevent losses;
- the financial crisis of 2008 confirmed objective estimates of the profitability of the allocation of savings and a high level of uncertainty. Expectations of high profitability in the 1990s did not materialize in the 2000s. The subsequent high volatility of assets and the absence of assets with

zero risk are characteristic of modern stock markets, raise the question of the future size of the funded pension, and, in general, of the very existence of schemes with secured financing of payments (funded). In this respect, recent data from countries such as Chile show an increase in the rate of wage growth, which is the indexation rate in the distribution systems, the rate of return on financial assets [16, p. 7].

Chile's experience showed that the transition to a fully funded system could not improve its financial sustainability, did not ensure broad coverage of workers with pensions, and did not lead to a stabilization of the financial situation of pensioners, especially those belonging to low-income groups of the population [22, p. 164], as a result, since 2008, along with a funded pension, solidary state pensions have been introduced in Chile.

In the Argentine pension system, only 41 % of employees participating in funded schemes regularly made payments. There were also problems with the investment of savings, most of which was placed in government debt denominated in national currency, the devaluation of which led to a depreciation of the assets of the funds. As a result, since 2009, Argentina has transferred pension savings to a single state pension system in order to guarantee the security of pension rights [22, p. 164].

The problems linked with the distributive method of funding itself enhance in the conditions of population's aging, and the devaluation of pension assets demonstrates the necessity to actualize the order of placement of pension savings assets.

The countries used the following mechanisms to decrease the risk of pension savings in the frames of the cumulative model:

- quantitative portfolio management that establishes a list of assets acceptable for investing pension savings indicating the maximum permissible share in the portfolio;

- establishment of general principles for the implementation of placements.

In the framework of quantitative portfolio management, strict restrictions on investment have been introduced in Japan,

Switzerland, Germany, Denmark, Portugal, Belgium and Russia. The list of allowable assets might narrow due to implicit prohibitions related to the contradictions in the legislative acts governing the rules of investing in a particular type of asset, or the actual absence of authorized assets in the market. In addition, the procedure for implementing transactions with certain types of assets may be regulated, which can practically exclude them from the list of possible investment alternatives.

In the UK, control is exercised through monitoring the market value of the portfolio and its volatility. Based on the fund's total liabilities to depositors, the threshold value of the portfolio of assets is established. When approaching this value, the fund may be required to transfer pension savings to less risky and more stable investments. A variety of guarantees that provide a certain amount of payments are designed to reduce the impact of investment risks on participants in funded pension schemes. In Chile, the state acts not only as a regulator, but also as an insurer of the investment risks of the system.

In the United States, Canada, Australia, the United Kingdom, Ireland and the Netherlands, the authorities that monitor investment processes do not set quantitative restrictions on investment in assets, but use flexible rules. This, in turn, obliges pension funds and management companies to equally observe the balance of interests between high investment returns and the safety of trusted pension capital [20, p. 24]. It contributes to increasing the financial importance of pension funds and their becoming key participants in the financial market alongside with insurance companies and banks, as well as the expansion of risk-control methods used for the banking sector in a number of developed countries (Australia, Denmark, the Netherlands) and developing (Mexico) countries.

The most important factor in assessing and maintaining the effectiveness of the cumulative method of forming pension system's income is to minimize the costs of managing the assets of non-state pension funds and management compa-

nies, as well as insurance organizations. High expenses for investment activity (according to some calculations, the aggregate expenses for managing an individual account range from 20 to 30 % of possible savings with moderate returns and moderate wage growth) can lead either to waste of pension savings, or to a significant decrease in the future amount of payments compared with possible payments having a more effective method of asset management. High costs of private management companies are one of the main arguments against introducing such a method in the US and Canada, where there are no compulsory contributions to the funded pension system. In the world practice, there are several models of commission collection and control over costs.

In England since 2000 market methods have been used to control costs. There is a single form of information disclosure including the publication of information on cleared of commissions profitability. There are tax incentives that encourage management companies to invest through index funds with commissions that do not exceed 1 % of total assets.

The Swedish model allows mutual or pension funds to manage mandatory pension savings provided that the level of commission costs is maintained in accordance with the scale calculated by the regulator of pension funds. The scale is based on an analysis of management company's costs, its commission for investors who purchase shares in the free market, as well as the amount of funds raised by the funded system. Overly retained commissions are returned to investors.

In the United States, the rights to manage public sector pension funds are distributed at a tender every 2–4 year with an average asset management fee of 0.11 % of the value of assets, which is about ten times less than the commission of the average US mutual fund and half the commissions for index funds. This is achieved by keeping document circulation and recording funds in depositors' accounts by the federal treasury. A high average amount of savings on accounts helps to reduce costs. The implementation of centralized

and transparent trades results in minimization of costs without excessive state regulation due to guaranteed amounts of contributions and limited competition.

In the Chilean model, the commission is levied once at a rate of 15.6 % at the time of the arrival of money into the system. Subsequently, only a nominal fee is collected from the assets for the maintenance of document circulation. Commission is not charged at the transition from fund to fund. The main disadvantage of this model is reduction of incentives for the successful operation in the management of funds and a rigid dependence of the fund's revenues on attracting new depositors.

At present the main problems facing national pension funds of most countries are [16, p. 14]:

- a decrease in pension differentiation;
- a decrease in the real size of pension payments due to the reduction in the number of employees and a decrease in productivity growth;
- revision of the financial mechanism to reduce the tax burden on workers and discrimination in the labor market;
- overcoming resistance to increasing the retirement age by certain age groups of voters;
- search for solutions for the portability of acquired pension rights through the profession, industry and countries, for increasing international mobility in the labor market.

Conclusions

The conducted research has revealed the influence of income formation methods of the national pension system (State pension system) on the sustainability of its functioning. In particular, the sustainability of the pension system based on the distributive method of funding is provided by matching the tariff of the insurance premium to the macroeconomic and demographic conditions of country development. For a pension system based on a cumulative method, sustainability is determined by ensuring a real annual return of pension savings placed in investment assets.

The analysis of pension systems of various countries revealed the negative impact of the global financial crisis of 2008, as well as demographic and social factors on national compulsory pension insurance systems based on the distribution method of funding. The influence led to parametric changes in OECD countries: a reduction in the ceiling of income for calculating insurance premiums and increasing the period of their payment, reducing the size of payments and raising the retirement age. In insurance systems based on a funded method of financing, the financial crisis contributed to the development of

an asset management methodology in accounting the life cycle of a portfolio.

Thus, the solution of Russian pension system problems should base on an organic combination of income generation methods, firstly, increasing the receipt of insurance contributions for compulsory insurance (pension insurance contribution) by increasing the motivation of citizens and organizations in their payment, and, secondly, increasing long-term sustainability of the national pension system, by expanding the use of the cumulative method of funding and ensuring a real level of return on pension savings assets.

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TAX COMPLIANCE AND THE CHOICE OF AN OPTIMUM STRATEGY FOR THE ECONOMIC AGENTS

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ABSTRACT

The strategy analysis of taxpayer behavior while observing tax law requires weakening of traditional initial assumptions in order to take into account the subjective character of economic agents' reaction to tax system changes. The aim of the given research is to identify the appropriate model of taxpayers' behavior in conditions of the tax control procedures transformation. The research methodology is based on the synthesis of the neo-classical concept of individual's rational choice, and on the assumptions of behavioral economics, which allowed considering the problem of tax evasion as the situation of social interaction among economic agents in decentralized system by taking into account their individual interests. The results of modeling demonstrated that tightening tax surveillance procedures undermines the coordination of interaction among autonomous tax groups. It leads to the growth of the possibility to select deviant behavior models. In this case the growth of tax management system efficiency expresses in budget income maximization, and is possible only by means of the extensive development of tax control procedures. The optimal strategy of the government behavior is using multimodal approach based on the partial replacement of control function for the cooperative strategy of tax subjects' interaction to reduce the natural taxpayer opportunism rate. And as an exceptional measure the harsh sanctions aimed to resist the deviant models of behavior are used. In this case the optimal choice for a taxpayer will depend additionally on the changes of social norms and stereotypes of behavior that characterize the quality of the institutional environment changes

KEYWORDS

Behavioral economy, tax compliance, tax evasion, tax policy

HIGHLIGHTS

1. Creation of the tax law observance models is necessary to recognize the existence of differentiated reaction to the actions of the state regarding the implementation of control functions. It demands weakening of the main assumptions of a rather rational behavior of economic agents
2. Prevalence of the rigid control function in the system of tax administration leads to the fact that this hierarchical system, which possesses the criterion function connected with maximizing the controllability of the system will never be able to increase the efficiency due to transition to a condition of decentralization
3. Change of tax control forms is possible based on introducing the procedures of "horizontal monitoring" of "a fair play of initiatives". It increases loyalty and trust by introducing the strategy of cooperation between taxpayers and the bodies of control

СОБЛЮДЕНИЕ НАЛОГОВОГО ЗАКОНОДАТЕЛЬСТВА И ВЫБОР ОПТИМАЛЬНОЙ СТРАТЕГИИ ПОВЕДЕНИЯ ЭКОНОМИЧЕСКИХ АГЕНТОВ

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АННОТАЦИЯ

Анализ стратегий поведения налогоплательщиков в части соблюдения налогового законодательства требует ослабления исходных классических допущений, чтобы учесть субъективный характер реакции экономических агентов на изменение налоговой системы. Целью исследования является определение оптимальной модели поведения налогоплательщиков в условиях трансформации процедур налогового контроля. Методология исследования основана на синтезе неоклассической концепции рационального выбора индивида и предпосылках поведенческой экономики, что позволило рассмотреть проблему уклонения от уплаты налогов как ситуацию социального взаимодействия экономических агентов в децентрализованной системе с учетом их индивидуальных интересов. Результаты моделирования показали, что ужесточение процедур налогового контроля отрицательно влияет на координацию взаимодействия автономных групп налогоплательщиков и приводит к росту вероятности выбора ими девиантных моделей поведения. В этом случае рост эффективности системы налогового администрирования, выраженный в максимизации доходов бюджета, возможен только за счет экстенсивного развития процедур налогового контроля. Оптимальной стратегией поведения государства является использование комбинированного подхода, который основан на частичной замене контрольной функции на кооперативную стратегию взаимодействия субъектов налоговой сферы для снижения естественного уровня оппортунизма налогоплательщиков, а в качестве исключительной меры используются жесткие санкции с целью противодействия девиантным моделям поведения. Тогда оптимальный выбор налогоплательщика будет дополнительно зависеть от изменения социальных норм и стереотипов поведения, которые характеризуют качество изменения институциональной среды

КЛЮЧЕВЫЕ СЛОВА

Поведенческая экономика, соблюдение налогового законодательства, уклонение от уплаты налогов, налоговая политика

ОСНОВНЫЕ ПОЛОЖЕНИЯ

1. Построение моделей соблюдения налогового законодательства с учетом дифференцированной реакции налогоплательщиков на действия государства в части реализации контрольных функций требует ослабления исходных классических допущений относительно рационального поведения экономических агентов
2. Доминирование в системе налогового администрирования контрольной функции приводит к тому, что данная иерархическая система, обладая целевой функцией, связанной с максимизацией контролируемости, не имеет возможности повышения своей эффективности за счет перехода в состояние децентрализации
3. Оптимизация форм налогового контроля возможна на основе внедрения процедур «горизонтального мониторинга» «фэйр-плей инициатив», повышения лояльности и доверия за счет внедрения стратегий сотрудничества налогоплательщиков и контрольных органов

Introduction

The interest in studying the problem of tax evasion is connected with emergence of the first systematic theoretical analysis carried out by Allingham and Sandmo [1]. The main questions which were studied in detail further concern the problems of tax evasion extent measurement, explanation of taxpayers' behavior, identification of the factors influencing the choice of economic agents as it is possible to use the received conclusions and results in practice.

Despite great success in this direction, there are considerable gaps in understanding, explaining and controlling illegal taxpayers' behavior.

In the last decade there were works devoted to the use of experimental methods and theoretical prerequisites of behavioral economy to explain these separate phenomena. On one hand, it allows solving a problem of the lack of reliable information on observance by the taxpayer in legislation. Another interpretation of the received results demands the integration of "direct", "indirect" and "model" approaches and development of universal methods and models of taxpayers' behavior assessment, as well as the assessment of the tax administration operating system efficiency.

The problems of economic agents' behavior modeling in the sphere of tax relations

Originally the key issues of tax law observance were resolved within the frames of the neoclassical concept. It generally analyzed influences of the taxation and control parameters on a ratio of the declared and not declared (shadow) income. For example, possible strategies of the state behavior in the course of control activity implementation are analyzed by Kronshou and Alma [2]. In the received model the taxpayer does not possess full information on possible checks, and the state does not possess all information on the size of the hidden income. The received results demonstrate that the uncertainty of audit can lead to decrease in

tax revenues and such type of behavior is counterproductive.

In general, the existing models allow considering the various aspects of a problem of tax evasion and improving tax discipline. For example, the analysis of the types of taxpayers' behavior (aggressive tax planning [3]), the ways of calculation and payment of taxes (the efficiency of the advanced system of tax payment [4]), expediency of tax control toughening mechanisms [5], the influence of centralization of the budgetary system level [6] is carried out.

There are two restrictive circumstances connected with theoretical and practical aspects of taxpayers' behavior modeling. First, the basic assumptions and prerequisites based on provisions of neoclassical school are too rigid, significantly simplifying real interaction of economic agents in the tax sphere. Secondly, inclusion of nonlinear communications considerably complicates the search of solutions of analytical models of tax evasion.

The main assumptions of rather rational behavior of economic agents which are also used in the analysis of taxpayers' behavior is the following:

1. It is supposed that the taxpayer acts as "homo economicus", i.e. has exclusively economic motivation, and its choice is described by maximizing function of usefulness which is presented in the form of net income. One of the early studies criticizing this prerequisite is the work of Alma and Torgler [7]. They come to the conclusions that the existing inaccuracy of behavior models of taxpayers relates to the fact that they do not behave as rational or selfish individuals. In decision-making process considerable impact is exerted by various aspects of "tax ethics" therefore the neoclassical paradigm cannot explain process of the choice of behavior model.

2. Evasion from the taxation in the form of removal of a part of the income to the shadow sphere is followed by certain expenses — transactional costs of evasion, which, as a rule, are not considered within neoclassical models.

3. In traditional neoclassical models of evasion the taxpayer necessarily acts

in the conditions of absolute knowledge of parameters and conditions of taxation, evasion and control. This assumption that the taxpayer acts in the localized social network is too strong. As shown in the work [8] it is also necessary to consider the factor of socially oriented taxpayers' behavior.

4. It is implicit that all taxpayers are the hidden opportunists – carriers of the opportunistic motivation, who are withheld from concealment of income only by the economic unprofitability of tax evasion, and, in case of its efficiency, all taxpayers will transfer their whole income to the shadow sector. Therefore, taxpayers are considered to be potential criminals, which allows estimating the efficiency of a traditional paradigm of tax administration only, and does not give the chance to consider customer-oriented approaches [9].

Many researchers note that it is impossible to ignore the influence of institutional bases and standards of behavior in the analysis of tax law problems. Davies, Hekht and Perkins note that the existing social norms of behavior accepted in certain circles exert considerable impact on taxpayers' behavior. However, toughening of law-enforcement policy in case of considerable differentiation of society can lead to sharp violation of an equilibrium state, and the achievement of new balance will be followed by considerable additional costs [10]. De Juan and Lasheras confirm, using the example of the Spanish taxpayers, that they render a set of demographic, psychological and social factors (besides the probability of tax evasion fact detection and the sizes of penalties for decision-making), which can have crucial importance in general [11]. Frey and Torgler's research allows answering the question why so many people are ready to pay taxes, even in case when the probability of check and the sizes of tax penalties are small. The results of modeling carried out with the data of the poll in 30 countries of Eastern and Western Europe show the existence of high dependence between tendency to tax evasion and the tax morality, as well as the quality of the institutional environment [12].

Several researches prove that the total choice of taxpayers is influenced by such factors as religion [13], existence of sense of guilt and shame [14], quality of democratic institutes [15], change of tax ethics [16], and existence of the sense of patriotism [17].

Thus, creating the models of tax law observance, it is necessary to recognize that there are diverse types of tax behavior which differ in the differentiated reaction to the actions of the state regarding the control function implementation. It demands weakening of initial classical assumptions that the taxpayer's behavior became more various and adaptive.

The substantial assumptions of the model are:

1. The taxpayer has the exogenous income which it distributes on declared and shadow speaks rapidly by the rules depending on type of his behavior.

2. The declared and shadow income is assessed: the first – at the tax rate, the second is assessed at the rates of a tax and a penalty at evasion detection.

3. Concealment of the income is accompanied by emergence of additional transactional costs which are set in the form of constant standard coefficient to the shadow income.

4. The shadow income can be found as a result of check which happens to a certain probability, and at detection can be revealed in whole or in part. Thus, efficiency of control in model is considered by means of an extensive factor – the frequency of checks, and an intensive factor – effectiveness of check (a share of the found shadow income). Both factors are set as random variables.

5. Restrictions for the maximum and minimum shares of the shadow income which reflect degree of aggression of taxpayer behavior are introduced.

As a result we can consider tax evasion as necessary action of the taxpayer which can be caused by exogenous shocks result of what there will be a transformation of system of tax administration regarding increase in its efficiency, first of all due to introducing the new softer tax control forms.

The task of the maximum share of the shadow sector allows considering the level of law-abiding of taxpayers and scales of distribution of the hidden opportunism. Respectively, the less its value, the lower is the potential level of tax evasion, irrespective of economic efficiency of this kind of behavior. The minimum share of the hidden income characterizes tendency of taxpayers to opportunism and shows its “natural” level. It should be noted that this indicator indirectly characterizes quality of the institutional environment [12]. Also, it is necessary to consider a possibility of use of procedures of horizontal control as for decrease in “natural” level of opportunism, and its growth above average value.

Level of “natural” opportunism depends on various factors where an important role is played by the taxpayers’ of justice assessment of tax system and its equivalence in terms of the public benefits provided by the state. Setting the minimum share of the hidden income, it is necessary to consider the fact that in society there is always a hidden opportunism which under certain conditions, providing its economic efficiency, can actively develop, and the opportunistic behavior becomes public standard and a stereotype of behavior.

The Model of the taxpayer optimum strategy choice in the decentralized system

Complexity of interaction of taxpayers with supervisory authorities is that the state has to constantly put certain pressure (implementation of control procedures) and at the same time is under reciprocal pressure (decrease in tax revenues due to use by taxpayers of deviant behavior models).

It is obvious that all set of taxpayers is the decentralized system. These systems are characterized by the fact that there is no uniform center of decision-making, so, decisions are made by each autonomous education separately (the natural or legal entity). It means that modeling of the decentralized systems, as a matter of fact, comes down to modeling of its separate

elements. Aggregation of behavior of separate elements of system will also make the general model of functioning of the decentralized system.

Considering that taxpayers’ pressure described above is collective action, in such system there is a problem connected this collective action happened presence of the taxpayers ready to tax evasion is necessary. In turn from outside the state is possible toughening of control procedures or introducing the new tax control forms based on cooperation. Anyway, a part of individuals decides to carry out collective action of Z , and the system in reply will increase the efficiency of E_s . At the same time the new condition of system and its level of efficiency is offered to all taxpayers, regardless of that, they evaded paying taxes or not. The formula is as follows:

$$E_s(Z) \rightarrow \max,$$

$$Z = \sum_{i=1}^n z_i,$$

$$\max\{z_i\} \ll Z.$$

The state seeks to maximize the operating system of tax administration. For this purpose it has to provide appropriate level of control, and each taxpayer makes the decision on a possibility of tax evasion. At the same time individual pressure is much less than necessary collective pressure. The described situation has the appearance represented in the following payment matrix (Table 1).

Table 1

Payment matrix of taxpayers’ pressure upon the state

Index	Z	Z^*
Pressure	$h(E'_s) - h(E_s) - z_i$	$-z_i$
Not pressure	$h(E'_s) - h(E_s)$	0

Where $h(E'_s)$ – benefit of the individual from the new level of system effectiveness; (E_s) – benefit of the individual from the old level of system effectiveness.

The game shown above is a game with the nature in which the nature has two states: achievement of the set level of collective pressure (Z) and not achievement of this level (Z^*). At achievement of the

set pressure level individuals can receive new benefits from system effectiveness expressed, for example, in granting tax benefits and decrease in a tax burden or introducing the new procedures of tax control ("horizontal monitoring" [18]).

The player's prize at strategy application "Pressure" and achievement of the set level of collective pressure is a difference between a benefit gain from change of system effectiveness $h(E'_s) - h(E_s)$ and selling costs of the individual pressure (z_i).

In case the taxpayer chose the strategy of "no-pressure" and at the same time the volume of under gathered taxes in the budgetary system reached critical level, then the individual receives the same gain of benefit from efficiency change, however at the same time it did not incur any costs.

If the individual chose strategy "Pressure", but at the same time the total volume of under gathered taxes in the budgetary system did not exceed critical level, then it, without getting anything, incurs transactional costs in connection with the choice of illegal behavior model, as well as potential penalties.

In case the individual chose the strategy of "no-pressure" and at the same time the set level of collective pressure was not reached, it gets nothing and loses nothing.

It is obvious that the strategy of "no-pressure" is the dominating strategy. It is favorable to taxpayer to remain law-abiding, at the same time he has the right to expect with a certain probability that there can occur weakening of fiscal or administrative pressure when he receives benefit, without having incurred any costs. Similar strategy in literature carries the name of a problem of the free rider [19].

To get rid of this effect, it is necessary to transform the public benefit to other type of the benefits, for example, in the club benefit [20]. The club benefit bears in itself restriction for use of it only of those people who made the individual action. At the same time the property of the club benefits connected with lack of the competition in consumption remains same, as well as at the public benefits. It is possible to carry additional 20 % to examples of the club benefits tax discounts which receive

the organizations which are members of self-regulating cooperatives in France.

Having destroyed a possibility of receiving the benefit without commission of individual actions, we transform the initial situation described in Table 1 to a classical problem of game theory.

The individual is offered to participate in a game. The cost of a game is equal to z_i . With probability of $p(Z)$ the individual can receive a prize C .

The individual possessing the neutral attitude towards risk will meet the following condition:

$$M = p(Z)[h(E'_s) - h(E_s) - z_i] + (1 - p(Z))(-z_i) > 0, \quad (1)$$

where M – population mean of a game, $p(Z)$ – probability that Z will be reached.

Having expressed from (1) probability that collective action will make Z , we receive the following expression:

$$p(Z) > \frac{z_i}{h(E'_s) - h(E_s)}. \quad (2)$$

Expression (2) is a necessary condition of participation of the taxpayer in collective action Z rather club benefits of E_s . From it is visible that the pressure level demanded from the individual is higher, the achievement of Z has to have a high probability. At the same time, on the contrary, the benefits from a new condition of system effectiveness are higher; the achievement of Z can have smaller probability in order that the taxpayer made the decision on realization of the individual pressure.

If specified in (2) ratio it is not carried out, but at the same time size $h(E'_s) - h(E_s)$ is rather big, then the taxpayer can consider the possibility to participate in other game. A game is in reaching a desirable condition of system effectiveness only through the individual action, for example, through bribery to the staff of tax authorities. At the same time increase in system effectiveness will happen only for it. That is in this case the benefit becomes individual.

Besides the individual possessing the neutral attitude towards risk will make the following assessment of population mean:

$$M = p(b)[h(E'_s) - h(E_s) - b] + (1 - p(Z))(-b - c) > 0, \quad (3)$$

where b – bribe size; $p(b)$ – probability to be not caught for bribery; c – punishment for bribery.

Having expressed from (3) probability to be not caught for bribery, we receive the following expression:

$$p(Z) > \frac{b + c}{h(E'_s) - h(E_s) - c}. \quad (4)$$

At with, striving for infinity, and b smaller what $h(E'_s) - h(E_s)$, it turns out that the probability of $p(b)$ aspires to unit. That is for participation in this game “severity of laws has to be compensated by a non-obligation of their execution”.

If for the taxpayer, conditions (2) and (4) are not carried out, then he refuses any attempts to increase system effectiveness with which interacts.

Distinctive feature of such projects is that the probability of successful fund raising, signatures, etc. is the dynamic size depending on the current level of the raised funds.

In relation to the situation with collective action described above the probability of achievement of the set level of pressure will have the following appearance:

$$p(nz^* > Z) = S(Z),$$

where n – the number of the taxpayers who made at the moment individual action; z^* – the average amount of unpaid taxes; $S(Z)$ – value of function of survival of collective action to level Z .

The solution to the problem of contradiction between taxpayers' individual actions and the efficiency of the decentralized system

The problem described above concerns only the creation of the pressure mechanism to increase the efficiency of tax control procedures, however it also exists in the analysis of negative impact of illegal taxpayers' behavior in open systems taking into account tax morals. The matter is rather well opened in work [8]. Actually, taxpayers possess ambivalent characteristics, such as ideas of probability of check and detention, as well as about the choice

of strategy of behavior by “the next taxpayers”. In this case the level of tax law observance grows, in comparison with a situation when the strategies of neighbors' payments are unknown to the taxpayer.

Thus, the model of the choice of strategy of taxpayer behavior is also described by expression (2). And tendency to tax law observance will be higher in case of existence of the club benefit.

However, It should be noted that, inclusion of a possibility of holding new procedures of tax control such as “horizontal monitoring” and “initiative fair play”, (“horizontal monitoring”, “fair-play initiatives”) in the conditions of the high level of tax morals leads to growth of transactional costs [18]. The following expenses concern to them:

- costs of internal audit for the purpose of restriction of access for unfair taxpayers for the accession to self-regulatory organizations, otherwise, it is costs of fight against C_{ji}

- costs of coordination of taxpayers (C_z), they have to agree about a target indicator (Z) and about the level of individual influence (z_i).

It means that expression (2) will take the following form:

$$M = p(Z)[h(E'_s) - h(E_s) - z_i - C_{fi} - C_{zi}] + (1 - p(Z))(-z_i - C_{fi} - C_{zi}) > 0, \quad (5)$$

where C_f – costs of fight against “free riders” counting on 1 individual; C_{zi} – costs of coordination counting on 1 individual.

If from (5) to express probability of achievement of Z again, then the following expression will turn out:

$$p(Z) > \frac{z_i + C_{fi} + C_{zi}}{h(E'_s) - h(E_s)}. \quad (6)$$

From (6) it is visible that increased requirements are imposed to probability of achievement of Z and to a benefit gain from a new condition of efficiency now. As a result of it many participants will count, it does not make sense that to participate in this game. If transactional costs have considerable level, then it can lead to the fact that the decentralized system will not be able effectively to create and consume both the public, and club benefits.

Having expressed from (6) size of transactional costs, we will receive the restriction for their sum necessary for participation of the individual in collective action:

$$C_{fi} - C_{zi} < p(Z)[h(E'_s) - h(E_s)] - z_i.$$

Transaction costs counting on 1 taxpayer have to be less, than the work of probability of achievement of Z and gain of benefit from growth of system effectiveness minus the size of individual pressure.

At outflow of individuals from the decentralized system in it the costs connected with coordination decrease. However, at the same time also the probability of achievement of Z as the potential number of participants decreases, so, the individual contribution of the individual of z_i raises. Therefore, the decentralized system will have the right for life only if:

$$\frac{dC_{zi}}{dN_d} = \frac{dp(Z)}{dN_d}[h(E'_s) - h(E_s)], \quad (7)$$

where N_d – the number of individuals in the decentralized system.

If the condition (7) is not satisfied, then in the considered environment there is only one system which is hierarchical. If the condition is satisfied, then the overflow of individuals in hierarchical system comes from the decentralized system until, optimum N_d value at which, on the one hand, there are rather low transaction costs will not be reached yet, on the other hand, there is enough people for achievement of the set level Z . In other words, such N_d at which in a condition (7) there is an equality of the left and right part is necessary.

Proceeding from the aforesaid, it is possible to draw a conclusion that an environment O can be described in the form of couple of values $\{\alpha; 1 - \alpha\}$ where α there is a share of the taxpayers using the decentralized system, and $1 - \alpha$ there is a share of the taxpayers using hierarchical system.

Provided that the hierarchical system is such a system, where the top level has the criterion of the function directed to maximizing efficiency, a couple of values $\{\alpha; 1 - \alpha\}$ will be optimum. If the hierarchical system is a system, where top levels of hierarchy have the criterion of the function connected with maximizing control-

lability of system, then the couple of values $\{\alpha; 1 - \alpha\}$ can differ from optimum. It is the fact that top levels of hierarchy to increase the control will seek to limit an overflow from hierarchical system in the decentralized system, as it will reduce their level of control.

From this a conclusion follows that a prevalence in system of tax administration of rigid control function and ignoring of such factors as trust to the operating tax system, existence of tax morals leads to the fact that this hierarchical system, possessing the criterion function connected with maximizing controllability of system will never be able to increase the efficiency due to transition to a condition of decentralization.

Conclusions

In the long term the increase in the systematic effectiveness of tax administration is possible due to the growth of entropy of the tax system top levels, reduction of uncertainty in the tax sphere, lifting of restrictions forming an imbalance of relationship between the state and taxpayers.

The first two options demand considerable investments. Increase in entropy of top levels of hierarchy requires the creation of additional divisions in tax authorities, increase in number of qualified personnel in the sphere of tax conflicts solution. Reduction of uncertainty demands introduces the new informational and analytical systems of decision-making support.

The third option is potentially the least expensive. The change of the right part of the restriction in the smaller party, under the law of hierarchical compensations by Sedov [21], will mean that the top level of hierarchy weakens functions of control and management and undertakes functions on coordination of the self-organized organizations created as a result of growth of entropy various autonomous. The change of tax control forms, introducing the procedures of “horizontal monitoring” of “a fair play of initiatives”, increases loyalty and trust due to introducing the strategy of cooperation of taxpayers and bodies of control, and can be the purpose of such coordination.

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Требования к статьям, публикуемым в журнале Journal of tax reform

Требования к структуре и содержанию статьи

1. Статья, представляемая для публикации, должна обладать новизной, быть самостоятельным, завершенным, характеризующимся внутренним единством исследованием актуальной проблемы, связанной с налоговыми реформами на международном и национальном уровнях.

2. Текст статьи следует структурно разбивать на разделы с заголовками, отражающие:

- актуальность темы исследования;
- степень изученности и проработанности проблемы;
- предлагаемые методы, подходы и их оригинальность;
- анализ полученных результатов;
- основные выводы, обобщающие полученные научные результаты, а также обозначающие направления дальнейших исследований по проблеме.

3. Статья должна содержать иллюстративный материал, демонстрирующий результаты исследований.

4. Статьи принимаются только на английском языке.

Правила оформления статьи

1. Текст статьи набирается в текстовом редакторе Microsoft Word и сохраняются в формате .docx.

2. При наборе необходимо учитывать следующее:

- формат листа — А4;
- шрифт — Times New Roman; размер основного текста — 14 пт., вспомогательного (аннотация, ключевые слова, таблицы, рисунки, литература) — 12 пт.;
- межстрочный интервал — одинарный;
- форматирование — по ширине;
- абзацный отступ — 1,25 см;
- поля — 20 мм со всех сторон;
- нумерация — внизу страницы.

3. Объем статьи не менее 18–25 страниц.

4. Статья должна содержать следующие элементы, оформленные в соответствии с требованиями журнала (см. образец оформления статьи):

- индекс УДК;
- заглавие статьи на русском и английском языках;
- информацию об авторе (ах) на русском и английском языках;
- аннотацию на русском и английском языках;
- 5–10 ключевых слов на русском и английском языках;
- основные положения статьи, которые отражают ключевые результаты исследования, основное содержание статьи, изложенные тезисно и оформленные в виде 3–5 пунктов маркированного списка;
- список использованной литературы (References);
- ссылки на литературу, оформленные согласно списку литературы в квадратных скобках.

5. Все элементы, перечисленные в п. 4, указываются сначала на английском языке, а затем на русском языке.

Рекомендации по подготовке аннотации статьи

Аннотация является источником информации о содержании статьи и изложенных в ней результатах исследований.

1. Аннотация выполняет следующие функции:

- дает возможность установить основное содержание статьи, определить его релевантность и решить, следует ли обращаться к полному тексту статьи;

- предоставляет информацию о статье и устраняет необходимость чтения полного текста статьи в случае, если статья представляет для читателя второстепенный интерес;

- используется в информационных, в том числе автоматизированных, системах для поиска необходимых статей и информации.

2. Аннотация к статье должна быть:

- информативной (не содержать общих слов);
- оригинальной;
- содержательной (отражать основное содержание статьи и результаты исследований);

- структурированной (следовать логике описания результатов в статье и разделенной на подзаголовки: цель исследования, методы, результаты, заключения);

- компактной (укладываться в **объем от 200 до 250 слов**).

3. Аннотация включает следующие аспекты содержания статьи:

- предмет, цель исследования (указываются в том случае, если они не ясны из заглавия статьи);

- метод или методологию проведения работы (целесообразно описывать в том случае, если они отличаются новизной или представляют интерес с точки зрения данной работы. В рефератах статей, описывающих экспериментальные работы, указывают источники данных и характер их обработки);

- результаты работы (описываются предельно точно и информативно. Приводятся основные теоретические и экспериментальные результаты, фактические данные, обнаруженные взаимосвязи и закономерности. При этом отдается предпочтение новым результатам и данным долгосрочного значения, важным открытиям, выводам, которые опровергают существующие теории, а также данным, которые, по мнению автора, имеют практическое значение);

- область применения результатов;

- выводы (могут сопровождаться рекомендациями, оценками, предложениями, гипотезами, описанными в статье).

4. В тексте аннотации следует употреблять синтаксические конструкции, свойственные языку научных и технических документов, избегать сложных грамматических конструкций. Текст должен отличаться четкостью формулировок и содержать только значимую информацию. Сведения, содержащиеся в заглавии статьи, не должны повторяться в тексте аннотации. В ней следует применять значимые слова из текста статьи.

Рекомендации по выбору ключевых слов

1. Ключевые слова выражают основное смысловое содержание статьи, служат ориентиром для читателя и используются для поиска статей в электронных базах, поэтому должны отражать дисциплину (область науки, в рамках которой написана статья), тему, цель и объект исследования.

2. В качестве ключевых слов могут использоваться как одиночные слова, так и словосочетания в единственном числе и именительном падеже. Количество слов внутри ключевой фразы (словосочетания) может быть не более трех.

3. Основные принципы подбора ключевых слов:

- применяйте базовые термины вместе с более сложными (бухгалтерский учет основных средств, бухгалтерский учет, основные средства); повторы и синонимы (грузовые перевозки — транспортная логистика, организация перевозок — логистика);

- не используйте слишком сложные слова (словосочетания, в которых приводится больше трех слов, чаще всего можно разбить на несколько ключевых слов (обработка и анализ данных — обработка данных, анализ данных)); слова в кавычках (ОАО «Иркутскэнерго» — Иркутскэнерго); слова с запятыми (факторы, определяющие качество — факторы качества, определение качества);

• каждое ключевое слово — это самостоятельный элемент. Ключевые слова должны иметь собственное значение (человеческий капитал, его оценка — человеческий капитал, оценка человеческого капитала).

Рекомендации по оформлению ссылок на использованную литературу

1. Нумерация в списке литературы осуществляется по мере цитирования. При повторном цитировании источника ему присваивается номер первоначального цитирования.

2. Ссылки на использованную литературу приводятся в тексте в квадратных скобках с указанием в них номера источника по Списку использованной литературы и страницы цитируемого фрагмента, напр.: [5, с. 115].

3. В оригинальной научной статье необходимо упоминание не менее 25–40 источников, имеющих автора, в научном обзоре — 50–80, в том числе не менее 50 % источников на иностранном языке. Редакционная коллегия рекомендует цитировать статьи из журналов, которые индексируются в международных базах данных (Scopus, Web of Science).

4. Электронные ресурсы, в которых не указан автор материала, статистические сборники, нормативно-правовые акты размещаются в постраничных сносках и в список использованной литературы не выносятся.

5. Самоцитирование автора допускается не более 20 % от количества источников в списке. Самоцитирование журнала (ссылки на статьи из данного журнала) не рекомендуется!!!

Пример оформления библиографических записей

1. Статьи в журналах:

Pimenov N. A. Fiscal risks in the system of tax security of businesses and State. *Nalogy = Taxes*, 2010, no. 4, pp. 10–13. (In Russ.).

Slemrod J. Lessons for Tax Policy in the Great Recession. *National Tax Journal*, 2009, vol. LXII, no. 3, pp. 387–397. Available at: http://webuser.bus.umich.edu/jslemrod/Great_Recession.pdf.

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Börner K., Klavans R., Patek M., Zoss A. M., Biberstine J. R., Light R. P., Larivière V., Boyack K. W. Design and update of a classification system: The UCSD map of science. *PloS one*, 2012, vol. 7, no. 7, pp. 1–10. DOI:10.1371/journal.pone.0039464.

2. Статьи из сборников научных трудов и материалов конференции:

Reingold I. I. The financial policy of NEP. In Sokolnikov G. Ya. (ed.) *Osnovy finansovoi sistemy SSSR* [Fundamentals of the financial system of the USSR]. Moscow, Gosfinizdat Publ., 1930, pp. 56–61. (In Russ.).

Atkinson A. B. Horizontal Equity and the Distribution of Tax Burden. In Aaron H., Boskin M. (eds.) *The Economics of Taxation*. Washington DC, Brookings Institution, 1980, pp. 3–18.

Börner K., Boyack K. W., Milojević S., Morris S. An introduction to modeling science: Basic model types, key definitions, and a general framework for the comparison of process models. In Scharnhorst A., Börner K., & van den Besselaar P. (eds.) *Models of Science Dynamics, Encounters Between Complexity Theory and Information Sciences*. Berlin, Springer, 2012, pp. 3–22.

Val'den P. I. The development of chemistry in Russia. *Dnevnik Vtorogo mende-leevskogo s'ezda po obshchei i prikladnoi khimii i fizike*. Saint

Petersburg, 21–28 dekabrya 1911 g. [The Diary of Second Mendeleev Congress on General and Applied Chemistry and Physics. Saint Petersburg, December 21–28, 1911]. Saint Petersburg, 2011, no. 1, pp. 124–141. (In Russ.).

3. Монографии, учебники, учебные пособия:

Kormishkina L. A., Koroleva L. P. *Finansovaya bezopasnost* [Financial security]. Saransk, The National research Mordovia State University Publ., 2016, 200 p.

James S., Sawyer A., Budak T. (eds). *The Complexity of Tax Simplification: Experiences From Around the World*. London, Palgrave Macmillan, 2016. 273 p.

Taleb Nassim Nicholas. *The Black Swan. The Impact of the Highly Improbable*. Random House, 2007. 400 p. (Russ. ed.: Taleb Nassim Nikolas. *Chernyi lebed'*. Pod znakom nepredskazuemosti. Moscow, KoLibri Publ., 2009. 528 p.).

4. Диссертации, авторефераты диссертаций:

Gombozhapova S. V. *Sovershenstvovanie nalogovogo kontrolya s uchetom istoricheskogo opyta*. Kand. Diss. [Improving tax control in context of historical experience. Cand. Diss.]. Irkutsk, 2012. 241 p.

Urban I. *Redistributive effects of direct taxes and social benefits in Croatia*. Doct. Diss. Slovenia, 2010. 199 p.

5. Электронные ресурсы, в которых указан автор материала:

Ivanov A. *Krepkii rubl' i deshevye kredity. Naskol'ko deistvenny predlozheniya Sergeya Glaz'eva* [Strong ruble and cheap loans. How effective are the proposals of Sergei Glazyev]. Available at: <http://svpressa.ru/economy/article/156619/>. (In Russ.).

Feldstein Martin. *The Case for Fiscal Stimulus*. Available at: <https://www.project-syndicate.org/print/the-case-for-fiscal-stimulus>.

Предоставление сведений об авторе (ах) статьи

1. В статье в информации об авторах на русском и английском языках указываются следующие данные:

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- занимаемую должность;
- рабочее подразделение (кафедра, факультет, институт и др.);
- место работы в соответствии с официальным названием организации;
- почтовый индекс организации — места работы (с указанием почтового индекса);
- адрес электронной почты (e-mail);
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2. Дополнительно указывается информация, которая служит для связи с автором и в журнале не публикуется:

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- телефоны (рабочий, мобильный);
- SPIN-код — персональный идентификационный код автора в Science Index (если имеется).

3. Фамилия и имя на английском языке указываются автором в соответствии с их написанием в ORCID или ранее опубликованным в зарубежных изданиях, входящих в международные базы данных (Scopus, Web of Science), либо указанным в заграничном паспорте.

Образец оформления статей

УДК 336.02

**TAX POLICY IN THE CONTEMPORARY WORLD:
PECULIARITIES AND PROSPECTS, IMPLEMENTATION IN RUSSIA**

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ABSTRACT

The article describes the peculiarities of tax policy implementation in the system of international economic relations under conditions of contemporary development, characterized by turbulence, unpredictability and high speed of changes. The author estimates the influence of modern transformational changes on national tax systems and tax policies of the leading countries of the World, including their adaptation to the so-called “new normality”, the decline of liberalism and the deceleration of globalization, virtualization of economic activity and revival of the idea of national identity. Taking into account the impact of the above factors, the author forecasts a common vector of national tax systems’ development, as well as evaluates inter-state interactions in tax matters and determines perspectives of tax policy improvement in Russia on the eve of presidential elections of 2018. The main conclusions are following: 1) in the modern world the best is such a tax policy, which is focused on the regulating (stimulating), and not on the fiscal role of taxes; 2) the process of intensive international tax cooperation, which started just after beginning of the recent global economic crisis, is developing quite successful and it involves more and more interested countries; 3) modern tax systems at the present time are influenced by a large number of transformational factors, including global turbulent environment, which are reflected accordingly in the national tax policy and not always unequivocally positive; 4) tax policy of the Russian Federation ahead of the presidential elections in 2018 and after them should be continuity to the period of 2000–2017 years, considering appropriate progressive global trends

KEYWORDS

International tax cooperation, international tax regulation, Russian tax policy, tax policy, tax regulation, tax system, tax reform, tax administration

HIGHLIGHTS

1. The process of intensive international tax cooperation, which started just after beginning of the recent global economic crisis, is developing quite successful and it involves more and more interested countries
2. Modern tax systems at the present time are influenced by a large number of transformational factors, including global turbulent environment, which are reflected accordingly in the national tax policy and not always unequivocally positive
3. Tax policy of the Russian Federation ahead of the presidential elections in 2018 and after them should be continuity to the period of 2000–2017 years, considering appropriate progressive global trends

**НАЛОГОВАЯ ПОЛИТИКА В СОВРЕМЕННОМ МИРЕ:
ОСОБЕННОСТИ И ПЕРСПЕКТИВЫ, РЕАЛИЗАЦИЯ В РОССИИ**

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АННОТАЦИЯ

В статье характеризуются особенности реализации налоговой политики в системе мирохозяйственных связей (включая Россию) в условиях повышенной экономической турбулентности, непредсказуемости и быстрых перемен. Оценивается влияние трансформационных изменений современности, включающих приспособление к так называемой «новой нормальности», заката либерализма и торможения глобализации, виртуализации хозяйственной активности и возрождения идей на-

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The requirements for the structure and content of the article

1. The article submitted for publication must contain novelty, must be an independent, complete and internally united research work on a current issue, related to tax reform at international and national levels.
2. The article should be structurally divided into sections with headings, reflecting:
 - relevance of the research;
 - background of a problem;
 - proposed research methods and their originality;
 - analysis of the study findings;
 - main conclusions, the results of the research and further discussion of them, or the problem solution.
3. The article should contain illustration material, showing the results of the research.

Format requirements

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 - the page size – A4;
 - font – Times New Roman; main text – 14-point, supplementary text (abstract, keywords, tables, figures, references) – 12-point;
 - line spacing – 1,0;
 - fit to the width;
 - indent – 1,25;
 - margins – 2.0 cm on all sides;
 - page numbers - at the bottom of the page;
3. Article should be 18–25 pages.
4. The article has to contain the following components drawn up in accordance with the journal's requirements (see the sample):
 - UDC code;
 - title of the article in Russian and English;
 - information about the author given both in Russian and English;
 - abstract in Russian and English;
 - 5–10 key words in Russian and English;
 - the highlights of the article reflecting the key results of the study, theses of the article's main content, in the form of 3-5 items of the bulleted list;
 - the list of references;
 - the article should have reference notes given in square brackets provided according to the references.
5. All the elements listed in Sec. 4, indicated first in original language of the article, then in the subsidiary language (articles in Russian - first in Russian and then in English, and in articles in the English- first in English, and then in Russian).

Guidelines for Abstract writing

An Abstract is a source of information on your paper's content and findings.

1. An Abstract has the following functions:
 - allows readers to identify the basic concept of your paper as well as its relevance and decide if the full text paper is of interest to them;
 - provides information on your paper and makes it unnecessary to read its full text version if it is of secondary interest to a reader;
 - is used in information (including computerized) search systems to find papers and information.

2. An Abstract should be:
 - informative (no general words);
 - original;
 - relevant (reflects your paper's key content and research findings);
 - structured (follows the logics of results' presentation in the paper and divided into sub-headings: the purpose of the research, methods, results, conclusions);
 - concise (**between 200 and 250 words**).
3. An Abstract should contain the following content aspects:
 - the statement of the object and purpose of your study;
 - research methods/methodology;
 - results observed;
 - the sphere of results application;
 - conclusions drawn from your study.
 - the object, topic and purpose of the research (if they are not clear from the title of the paper);
 - the research methods/methodology if they are original or of interest for this particular research. For papers concerned with experimental work describe your data sources and data process technique;
 - the results of research should be described as precisely and informatively as possible. Include your key theoretical and experimental results, factual information, revealed interconnections and patterns. Give special priority to new results and long-term impact data, important discoveries and verified findings that contradict previous theories as well as data that you think have practical value.
 - the sphere for implementation the results of the research;
 - conclusions could be associated with recommendations, estimations, suggestions, hypotheses described in the paper.
4. Use the language typical of research and technical documents to compile your abstract and avoid complex grammatical constructions. Information contained in the title should not be repeated in the abstract. The abstract should be concise and clear and reflect only the main information of the original paper. The text of the abstract should include key words of the paper

Guidelines for Keywords

1. Keywords encapsulate the principal topics of the paper. These keywords will be used for indexing purposes as a guide to search the articles in electronic databases, therefore, they should reflect area of science in which the article was written, the subject, the purpose and object of research
2. The keywords can be used as single words and phrases. Key phrase (phrases) should contain no more than three words.
3. Basic principles for keyword selection:
 - avoid general and plural terms and multiple concepts (avoid, for example, "and", "of").
 - be sparing with abbreviations: only abbreviations firmly established in the field may be eligible. These keywords will be used for indexing purposes.
 - each keyword should have its separate meaning.

Guidelines for Reference

1. The list of references should be arranged in the order of the appearance the citations in the text. In case of repeated citation the number is the same.
2. To associate the list of references with the text of the article, you should include a reference as a number (running number of the source from the list) and also the page number in square brackets: [5, c. 115].

3. In the original scientific paper must be not less than 25–40 references, in the scientific review — 50–80 references. The Editorial Board recommends to cite papers indexing in international databases (Scopus, Web of Science).

4. The electronic sources without an author, statistic and regulation materials should not be included in the list of reference, but preferably set as a footnotes at the end of the page.

5. Author's self-citations should not exceed 20 % of the number of sources in the list of references.

Information about the author (s)

1. The information about the authors in Russian and English indicates the following data:

- surname, first name, middle name (in full);
- academic degree, academic title (in full);
- position;
- operating unit (department, chair, institute etc.).
- affiliation (the official name of the organization);
- organization address (including postcode);
- author's e-mail;
- ORCID (Open Researcher and Contributor ID) (if available).

2. Information for communication with the author (not published in the journal):

- post address for correspondence (with post index);
- phone numbers (office, mobile);
- SPIN-code — personal identification author's number in the Science Index (if available).

3. Full name in English is indicated in accordance with its writing at ORCID or previous publication in foreign journals included in international databases (Scopus, Web of Science), or as it is indicated in a foreign passport.

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