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FRAUD WITH FINANCIAL RESOURCES OF THE STATE: TYPES AND EFFECT ON THE SHADOW ECONOMY

Abstract. Neutralization of threats to the national security of the state, caused by consequences of financial fraud, necessitates development of qualitatively new approaches to reveal the causes and vectors of its influence on the state's economy in general and welfare of its citizens. In the article the essence is investigated and varieties of financial fraud, depending on the object of fraudulent actions and the method of implementing fraudulent schemes, are systematized, their influence on formation of the shadow economy sector in Ukraine is determined.

The most common methods of committing fraud with financial resources of the state, used in modern Ukrainian realities, namely unlawful and inappropriate use of public funds; evasion of tax payment; fraud in the field of public procurement and falsification of financial reporting are analyzed. According to the audit results, conducted by the Accounting Chamber of Ukraine and the State Audit Service of Ukraine, types of fraud with budget resources are described.

It has been established that increase of the level of economy shadowing indicates decrease in amount of budget resources that are formed as a result of GDP distribution; therefore, in order to find reserves for increasing budget revenues under the current conditions, it is necessary to implement measures in the context of unshadowing the Ukrainian economy.

On the basis of theoretical multiplicity approach and analysis of interval data, an interval model of the state budget revenues dynamics that allows determining predicted dynamics of budget revenues, taking into account an influence of such factors as GDP, incomes of population and financial results of enterprises before taxation, was developed. As a result of prediction, the indicators also reflect the amount of reserves for growth of budgetary resources, provided that successful measures are implemented in direction of unshadowing the Ukrainian economy. In order to detect and prevent fraud with financial resources of the state, necessity and justification of the ways to improve the state financial control in this area is proved.

Keywords: fraud; types of fraud; fraud with financial resources of the state; misuse of budget funds; tax evasion; fraud in the field of government procurement; falsification of financial reporting; shadow economy

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ШАХРАЙСТВО З ФІНАНСОВИМИ РЕСУРСАМИ ДЕРЖАВИ: ВИДИ І ВПЛИВ НА ТІНЬОВУ ЕКОНОМІКУ

Анотація. Нейтралізація загроз національній безпеці держави, спричинених наслідками фінансового шахрайства, зумовлює потребу розроблення якісно нових підходів до виявлення причин та векторів його впливу на економіку держави загалом і добробут її громадян.

Досліджено сутність і систематизовано різновиди фінансового шахрайства залежно від об'єкта шахрайських дій і способу реалізації шахрайських схем, визначено їхній вплив на формування тіньового сектору економіки в Україні. Проаналізовано найпоширеніші в сучасних українських реаліях способи вчинення шахрайства із фінансовими ресурсами держави: незаконне і нецільове використання бюджетних коштів; ухилення від сплати податків; шахрайство у сфері державних закупівель і фальсифікація фінансової звітності.

За результатами контролю, проведеного Рахунковою палатою України і Державною аудиторською службою України, охарактеризовано види шахрайства з бюджетними ресурсами. Установлено, що зростання рівня тінізації економіки свідчить про зменшення обсягу бюджетних ресурсів, які утворюються у результаті розподілу ВВП, тому з метою пошуку резервів зростання доходів бюджету доцільним у сучасних умовах є здійснення заходів у контексті детінізації української економіки.

На основі використання теоретико-множинного підходу та аналізу інтервальних даних розроблено інтервальну модель динаміки доходів бюджету держави, яка дає змогу визначити прогнозовану динаміку доходів бюджету з урахуванням впливу таких факторів, як ВВП, доходи населення і фінансові результати підприємств до оподаткування. Отримані в результаті прогнозування показники також відображають обсяг резервів зростання бюджетних ресурсів за умови успішного впровадження заходів у напрямі детінізації української економіки. Для виявлення і попередження випадків шахрайства із фінансовими ресурсами держави доведено доцільність та обґрунтовано шляхи удосконалення державного фінансового контролю.

Ключові слова: шахрайство, види шахрайства, шахрайство з фінансовими ресурсами держави, нецільове використання бюджетних коштів, ухилення від сплати податків, шахрайство у сфері державних закупівель, фальсифікація фінансової звітності, тіньова економіка.

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МОШЕННИЧЕСТВО С ФИНАНСОВЫМИ РЕСУРСАМИ ГОСУДАРСТВА: ВИДЫ И ВЛИЯНИЕ НА ТЕНЕВУЮ ЭКОНОМИКУ

Аннотация. Исследована сущность и систематизированы виды финансового мошенничества в зависимости от объекта мошеннических действий и способа реализации мошеннических схем, определены их влияние на формирование теневого сектора экономики в Украине. Проанализированы способы совершения мошенничества с финансовыми ресурсами государства. Определены виды мошенничества с бюджетными ресурсами, обоснованы пути совершенствования государственного финансового контроля.

На основе использования теоретико-множественного подхода и анализа интервальных данных разработано интервальную модель динамики доходов бюджета государства, которая позволяет определить прогнозируемую динамику доходов бюджета с учетом влияния таких факторов, как ВВП, доходы населения и финансовые результаты предприятий до налогообложения.

Ключевые слова: мошенничество, виды мошенничества, мошенничество с финансовыми ресурсами государства, нецелевое использование бюджетных средств, уклонение от уплаты налогов, мошенничество в сфере государственных закупок, фальсификация финансовой отчетности, теневая экономика.

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Introduction. The study of nature, types and possible consequences of financial fraud under the current conditions of development of the Ukrainian economy is an extremely urgent task, and counteracting financial fraud and minimizing its negative consequences require qualitatively new approaches to identify the causes and vectors of its impact on the state's economy in general and welfare of its citizens in particular.

International company "Price waterhouse Coopers" among the most widespread economic crimes and fraud in 2018 identified the following: bribery and corruption (in Ukraine, 73% of the polled organizations faced cases of bribery and corruption, in the world — 25%), illegal property appropriation (its indicator in Ukraine and the world is almost identical and makes 46% and 45% respectively), fraud in the field of procurement (Ukraine — 33%, world index — 22%), fraud in the field of personnel management (Ukraine — 33%, world index — 12%), cybercrime (Ukraine and the world — by 31%), in the sphere of taxation (23% and 5% respectively), falsification of financial statements (Ukraine — 13% and the world index — 20%) and insider trading (Ukraine and the world — 6%) [1, p. 4].

Association of Certified Fraud Examiners (ACFE) in their study "Report to the Nations" on the results of 2018 highlighted the most widespread financial fraud schemes: assets appropriation, corruption and falsification of financial reporting [2].

Thus, we can state that among the many varieties of fraudulent actions, a significant part is taken by those which directly connect various types of manipulations with financial resources of the state.

Analysis of research and setting objectives. Works of Ukrainian and foreign scholars, especially in the field of law sciences: Chernyavskiy S. S., Cressey D. R., Jamalmanesh A., Kalman O. G., Karpovych O. G., Kravchenko O. V., Kurman O. V., Matusovsky G. A., Medina L., Razmi M., Schneider F., Pyvovarov V. V. and others deal with the study of various aspects of economic crime, including financial fraud. However, in modern domestic financial science, there are no publications that would purposefully and comprehensively cover the problem of fraud with financial resources of the state in terms of its economic effects and consequences.

The aim of the article is systematization of certain types of fraud with financial resources of the state and study of their influence on formation of the shadow economy sector in Ukraine.

Results of research. Under modern conditions, there are many types and methods of committing financial fraud, in addition, they are constantly upgraded, refined, and modernized. However, the main prerequisites (reasons), for which fraud may appear, are the following: motivation, possibility of realization and justification (the "triangle of fraud" by Cressey D. R. [3])

remain unchanged. Therefore, taking into account the most common features of financial fraud, to our mind, depending on the object of fraudulent actions, it is necessary to distinguish the following varieties: fraud with financial resources of the state; fraud with financial resources of legal entities; fraud with financial resources of individuals.

In turn, according to the method of realization of fraudulent schemes we consider it expedient to allocate the following: fraud committed with deceit; fraud committed with abuse of trust; fraud committed with abuse of official capacity.

Since there are quite a lot of ways of committing fraud with financial resources of the state (as shown by studies [1, 2]), and considering that the main part in their structure primarily take frauds with budgetary resources, we analyze in more details those that are the most widespread in modern Ukrainian realities, namely: unlawful and inappropriate use of public funds; evasion of tax payment; fraud in the field of public procurement and falsification of financial reporting.

Topicality of inappropriate use of public funds (their use for purposes not corresponding to budget one; directions, specified in the passport of the budget program; budgetary appropriations, including direction of public funds to expenditures, directly prohibited by law) is that this crime is quite common in many branches of Ukrainian economy and it is very difficult to prove it.

According to the Accounting Chamber of Ukraine, in 2017 there were identified violations of budget legislation, including inappropriate and ineffective use of public funds of Ukraine, in amount of 23.03 billion UAH [4], and this type of offense was dominant in 2004—2007, 2011—2012 and 2016 (Fig. 1).

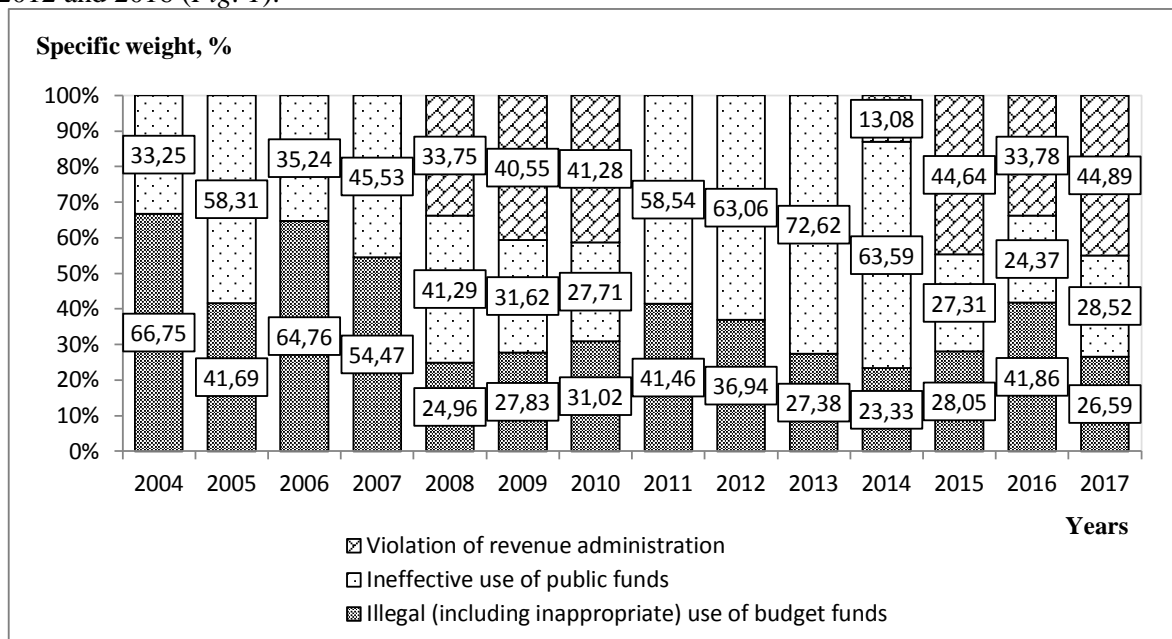


Fig. 1. Dynamics of the structure of the budget legislation violations in 2004—2017, detected by the Accounting Chamber of Ukraine, %

Source: constructed by the authors on the basis of reports of the Accounting Chamber of Ukraine [4].

In addition to the Accounting Chamber of Ukraine, the State Audit Service of Ukraine plays an important role in detecting fraud with budgetary resources through the state financial audit, inspections, review and monitoring of procurement using budget resources and conservation of the state and communal property.

It should be also noted that for a long time in domestic legislation and Ukrainian practice, fraud was practically unrelated to implementation of the state financial control. Just in 2005, the terms “fraud” and “inspection”, as interconnected, were first used in the Concept for Development of the State Internal Financial Control, approved by the Cabinet of Ministers of Ukraine on May 24, 2005.

The results of financial control carried out by the bodies of the State Audit Service of

Ukraine in 2004—2017 also indicate negative practice of using budget resources in violation of the legislation (*Table 1*).

Table 1

Dynamics of the structure of budget legislation financial violations in 2004—2017,
detected by the State Audit Service of Ukraine, %

Years	Kinds of financial violations								Total violat-e-ons, million UAH
	lack of financial resources		illegal expenditures of resources		inappropriate expenditures of resources		Lack of funds and material values		
	amount, mln UAH	specific weight, %	amount, mln UAH	specific weight, %	amount, mln UAH	specific weight, %	amount, mln UAH	specific weight, %	
2004	118,8	21,92	295,3	54,48	64,1	11,83	63,8	11,77	542
2005	453,7	25,06	1164,7	64,33	151,1	8,35	41,1	2,27	1810,6
2006	500,2	31,24	886,6	55,38	142	8,87	72,1	4,50	1600,9
2007	325	14,74	1332,5	60,42	322,1	14,61	225,7	10,23	2205,3
2008	1275,2	34,44	2057,3	55,56	264,7	7,15	105,9	2,86	3703,1
2009	1459	42,47	1607,1	46,78	313,1	9,11	56,4	1,64	3435,6
2010	2533,7	7,21	25964,9	73,92	3067,9	8,73	3560,4	10,14	35126,9
2011	1519,2	28,09	3024,1	55,92	261,2	4,83	603,3	11,16	5407,8
2012	813,6	21,83	2486,3	66,70	112,4	3,02	315,2	8,46	3727,5
2013	1276	34,59	2068	56,06	128,7	3,49	216,5	5,87	3689,2
2014	3159,4	42,07	3888,1	51,78	160,5	2,14	301,6	4,02	7509,6
2015	790,5	20,42	2737,2	70,72	82,1	2,12	260,6	6,73	3870,4
2016	1298,1	49,69	1071	40,99	163,4	6,25	80,1	3,07	2612,6
2017	642,9	34,36	1122,6	60,01	81,1	4,34	24,1	1,29	1870,7

Source: constructed by the authors on the basis of reports of the State Audit Service of Ukraine / State Financial Inspection of Ukraine / State Control and Revision Service of Ukraine [5]

Thus, according to the State Audit Service of Ukraine, as a result of the unlawful actions of individual heads on sale of goods, works and services at low prices, free provision of natural and material resources to lease, only in 2016 budgets of all levels, budget institutions and organizations, enterprises lost the opportunity to receive their revenues of more than 1.3 billion UAH [5].

Undoubtedly, the Consolidated Budget of Ukraine lacks huge amounts of money and due to the existence of such a kind of fraud with financial resources of the state as evasion of tax payment. So, according to the results of research of the Chartered Association of Certified Accountants (ACCA), shadow economy in Ukraine reaches 46% of the official GDP of the country. Government officials say that the part of shadow sector in Ukraine is somewhat more modest and equals about 35% of the official GDP.

Domestic scholar of shadow economy V. Dubrovskiy made a schemes rating, because of which the budget of the country annually loses from 100 to 150 billion UAH. According to the expert, the biggest budget losses are due to offshore schemes (50—65 billion UAH), “gray” import and smuggling (25—70 billion UAH) and the activities of conversion centres (12—15 billion UAH) [6].

Among the financial violations detected by the Accounting Chamber of Ukraine, there are also significant violations in the field of procurement of goods, works and services for public funds (62.8 million UAH in 2017) [4]. The sphere of state (public) procurement is a huge market of goods, works and services, volume of which is more than a quarter trillion UAH or about one third of expenditures of the Consolidated Budget of Ukraine and more than 10% of the country’s GDP. Consequently, significant volume of market significantly increase possibility of abuse and fraudulent actions by interested parties in this area. The main forms of such abuses are: artificial limitation of the rights of potential suppliers to participate in procurement; admission to participation in the bidding of participants representing fictitious companies (single day companies); violation in determining the winner of procurement procedure, etc. Unfortunately,

introduction of ProZorro’s electronic procurement system did not help to overcome existing problems in this sphere.

One of the varieties of financial fraud, obviously, is falsification of financial reporting. It should be emphasized that various types of manipulation with methods or approaches to financial reporting in modern conditions are called “modified (or creative) accounting”, which results in financial statements that do not reflect the real state of affairs and mislead users. This gave reason to Ukrainian scientist Holov S.F. to assert that creative accounting is a kind of buffer between zone of errors and frank fraud [7, p. 33]. Among the methods for fraudulent financial reporting, the experts point out the following: “1) manipulation, falsification (including forgery) or deformation of accounting records or documents on the basis of which these financial statements are prepared; 2) incorrect coverage or deliberate omission of certain events, transactions or other important information in financial statements; 3) deliberately misuse of the principles of accounting for amounts, classification, presentation or disclosure” [8, p. 82]. Violations related to inappropriate accounting and reporting, according to the Accounting Chamber of Ukraine, amounted to 52.5 million UAH in 2017 [4].

It is obvious that the main reason for economy shadowing is the lack of institutional environment in which the shadow economy would become ineffective. Today, the main factors that cause this negative phenomenon are high level of corruption, low efficiency of economic reforms, inefficient judicial system, imperfect system of public procurements, insufficient protection of property rights, instability of tax legislation and unpredictability of its changes, deterioration of budgetary discipline by participants in the budget process, etc. [9; 10].

As increase in the level of economy shadowing indicates decrease in the volume of budget resources generated as a result of GDP distribution, in order to find reserves for growth of budget revenues in current conditions it is necessary to carry out a number of measures in the context of shadowing the Ukrainian economy.

To solve this problem, we use the developed interval model of the state budget revenues dynamics based on the theoretical-plural approach, analysis of interval data and, unlike regression models, take into account the inertia of formation processes of the mentioned revenues and impact on the volume of the state budget revenues of such factors as GDP, income of population and financial results of enterprises before taxation.

The budget revenues dynamics for different time discrete is described in general terms with such linear difference equation (1):

$$v_k = a_0 + a_1 \cdot v_{k-1} + \dots + a_d \cdot v_{k-d} + \sum_{j=1}^n (b_{j0} + b_{j1} \cdot u_{jk-1} + \dots + b_{jd} \cdot u_{jk-d}), \quad (1)$$

where v_k — estimated revenue value at k -moment; $v_{k-1} \dots v_{k-d}$ — value of revenue in previous periods of time ($k-1, \dots, k-d$); d — order of the difference equation; $a_0, a_1, \dots, a_d, b_{j0}, b_{j1}, \dots, b_{jd}$ — its indefinite coefficients; $u_{jk-1}, \dots, u_{jk-d}$ — value of influence factors at the appropriate moments.

To construct a discrete dynamic model (1) its general view is determined and its coefficients are adjusted on the basis of the data of previous periods. According to the results of the analysis, it is established that the most acceptable form of determining the input data for identifying the model of budget revenue dynamics is the interval representation of data, which made it possible to identify it. Taking into account the conditions for ensuring the accuracy of the mathematical model within the limits of the error in defining actually mobilized revenues of the state budget, reflected in reporting on implementation of the state and local budgets of Ukraine (lower interval limit) and possible revenues of the state budget under the conditions of economy unshadowing, calculated on the basis of experts’ estimations (upper interval limit), the discrete dynamic model has the following interval representation (2):

$$[\bar{v}_k] = a_0 + a_1 \cdot [\bar{v}_{k-1}] + \dots + a_d \cdot [\bar{v}_{k-d}] + \sum_{j=1}^n (b_{j0} + b_{j1} \cdot [u_{jk-1}] + \dots + b_{jd} \cdot [u_{jk-d}]), \quad (2)$$

where $[\hat{v}_k] = [\hat{v}_k^-; \hat{v}_k^+]$ — predicted revenue range at k -moment, the width of which is determined with the discrepancy between the data obtained on the basis of expert estimates and the reporting data.

To calculate unknown estimates $a_0, a_1, \dots, a_d, b_{j0}, b_{j1}, \dots, b_{jd}$ the coefficients of discrete equation methods of interval analysis are used. In particular, it is assumed that the estimated value of budget revenues in the form of a numerical interval for each time discrete should belong to a defined interval based on the reported data and expert estimates. As a result of calculations, carried out according to the data of 2016 (with the initial conditions $\pm 2\%$, $k = 1 \dots 4$ for the given amount of budget revenues, taking into account the existing level of economy shadowing for the first four months), the following model of dynamics of the budget revenues (3) was obtained:

$$[\hat{v}_k] = a_0 + a_1 \cdot [\hat{v}_{k-2}] + a_2 \cdot [\hat{v}_{k-3}] + b_{1,1} \cdot u_{1,k-2} + b_{2,1} \cdot u_{2,k-3} + b_{3,1} \cdot u_{3,k-2}, k = 5 \dots 12, \quad (3)$$

where coefficients:

$$a_0 = 0,0279, a_1 = -0,1045, a_2 = 0,2152, b_{1,1} = 0,4794, b_{2,1} = -0,1305, b_{3,1} = -0,2003.$$

The proposed model takes into account influence of all identified factors (GDP, income of population and financial results of enterprises before taxation) and is a difference equation of the third order. Taking into account importance of checking the prognostic properties of the model on the data that were not used for its identification, the indicated interval model was used to predict the indicators for 2017 and compared projected on its base value with the amount of revenue, reflected in the reporting on implementation of the state and local budgets of Ukraine, and the volume of possible revenues of the state budget under the condition of economy unshadowing, based on experts' assessments. For the construction of prediction, interval estimates of budget revenues for the first four months with an error of $\pm 2\%$ were used.

The results of comparison are shown in Fig. 2.

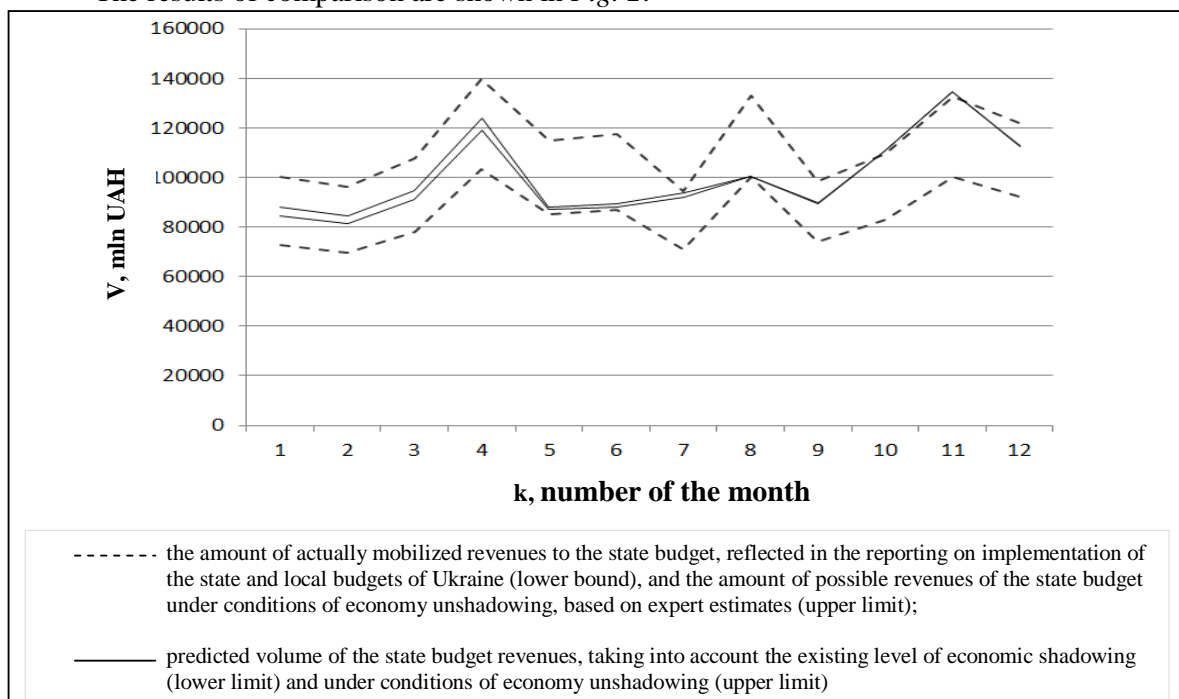


Fig. 2. The results of comparison of predicted volume of the state budget revenues, determined on the basis of an interval discrete dynamic budget revenue model for 2017, with the volume of actual budget revenues, taking into account the existing level of economy shadowing and possible budget revenues, under the condition of economy unshadowing

Source: composed by the authors.

Thus, the presented interval model of the state budget revenues dynamics reflects the real dynamics of budget revenues in 2017, that is, it is adequate. The indicated model serves as a methodological basis for predicting budget revenues as a component of budgetary resources for coming

years, an advantage of which is the ability of quick adjust to other conditions with the task of indicators for the first four months of the budget year.

In addition, the difference between the predicted volume of possible revenues of the state budget under condition of economy unshadowing (upper limit) and the predicted volume of revenues of the state budget, taking into account the existing level of economy shadowing (lower limit), reflects the volume of income growth reserves under conditions of implementation of successful measures in the direction of unshadowing of the Ukrainian economy.

Conclusions. The conducted research showed that the most common methods of committing fraud with the financial resources of the state include unlawful and inappropriate use of public funds; evasion of tax payment; fraud in the field of public procurement and falsification of financial reporting. Growth of the economy shadowing level as a result of increase in the diversity of fraudulent activities indicates reduction in the amount of budget resources that result from distribution of GDP, therefore, in order to find reserve of budget revenues growth under the current conditions, it is necessary to implement measures in the context of shadowing of the Ukrainian economy. In order to determine the amount of reserves for budgetary resources growth provided that these measures are successfully implemented, as well as calculation of the expected dynamics of budget revenues, taking into account the influence of such factors as GDP, income of population, financial results of enterprises before taxation, it is proposed to use the developed interval model of the state budget revenues dynamics.

In order to detect and prevent fraud with financial resources of the state, at first it is advisable to improve financial control in the context of intensification of relations between the subjects of state financial control (Accounting Chamber of Ukraine, the State Audit Service of Ukraine, the State Fiscal Service of Ukraine, the State Treasury Service of Ukraine, Ministry of Finance of Ukraine, law enforcement and local self-government bodies) by creating a unified information base on the objects and results of such control; as well as strengthening measures of primarily financial impact on violators of budget legislation in order to minimize the avoidance of liability for financial violations.

Therefore, we are convinced that only clear understanding of the motives and reduction of opportunities for fraudulent actions implementation, as well as implementation of effective external and internal financial control only, can serve as effective instruments for reducing the risks of financial fraud in the public sector of Ukraine and the level of the national economy shadowing.

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