The Quality of Tax Administration, Macroeconomic Stability and Economic Growth: Assessment and Interaction

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Abstract: The article deals with investigating the link between the quality of tax administration, macroeconomic stability and economic growth. The paper identifies the benefits and risks of the shadow operations for macroeconomic stability of the country. Based on the analysis of indicators of the effectiveness of tax policy implementation, an approach to assessing the quality of tax administration of the country was proposed. Based on empirical calculations, a conclusion about the low quality of tax policy in the country was made. The study of the relationship between the quality of tax administration and macroeconomic stability is based on the modified least squares method. The EU countries and Ukraine are identified as the statistical base of the study and the assessment period is 2005–2019. The results of modelling on the example of Ukraine and EU countries proved the relationship between the quality of tax administration of the country and level of its macroeconomic stability and shadow economy. All indices are statistically significant at the level of 1% and 5% and 10% respectively. This research let the authors conclude that it is necessary to take into account the quality of tax administration in forecasting the level of shadow economy and economic growth.

Keywords: Tax policy; Macroeconomic stability; Economic growth; Sustainable growth; Shadow economy; Tax administration; Sustainable development; Economic development policy.

1. INTRODUCTION

The permanent growth of the shadow economy in most countries of the world creates the preconditions for more effective formation and implementation of certain components of the de-shadowing policy. Today, the problem of identifying the most effective and priority measures to combat shadow operations is acute, both at the national and international levels. An important component of these processes is the availability of effective institutional tools for implementing the policy of combating shadowing. Significant volumes of the shadow sector of the economy, which are typical for most countries with low and medium levels of economic development, have led to the introduction at the institutional level of diversified tools that differ in focus, strength and nature of influence.

The availability of a high-quality institutional environment for business operations is a catalyst for reducing the volume of shadow operations due to both restrictive and regulatory measures aimed at establishing the fact of shadow activity and preventing its implementation.

In recent years, a set of measures has been introduced in the world to combat the shadowing of the economy, which includes: improving the system of financial monitoring and control, reforming the tax system, introducing a number of anti-corruption measures and more. Their implementation has contributed to a slight decrease in the global average shadow economy (from 43% of GDP in 2014 to 28% in 2020). At the same time, according to most experts it still poses a threat to the economic security of most countries and their economically sustainable development.

The results of the forecast of the level of the shadow economy in some countries of the world for 2025 conducted by the representatives of the International Association of ACCA, indicate the instability of the dynamics to reduce the volume of shadow financial transactions in most of the analyzed

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countries. Only in Australia, India, Japan, Latvia and Malaysia, the forecast values for 2025 are lower than in 2017 by more than 3%. On average, the level of shadowing in these countries is projected to decrease by 3-5%. At the same time, in most countries the forecast values of the level of the shadow economy are equal to their current values. In Azerbaijan, the forecast level of shadowing will increase by 11% compared to 2011.

Thus, the results of the investigation allow us to conclude about the low effectiveness of existing tools to combat the shadow economy in most countries. Despite the significant variety of restrictive and stimulating mechanisms for influencing economic entities aimed at withdrawing cash flows from the shadows, their efficiency remains rather low, and the current amount of income concealment far exceeds the amount of funds withdrawn from the shadow circulation.

The above forms the preconditions for assessing the effectiveness of the state's measures to de-shadow the national economy, determining the main prerequisites for their low effectiveness.

Empirical substantiation of the expediency of forming a qualitative institutional component of the mechanism of de-shadowing of the economy as a guarantee of reducing the volume of shadow operations is carried out in the scientific works of a large number of scientists. In papers authors analyzed the impact of the institutional component on the effectiveness of the state policy of de-shadowing the economy. According to the research, the authors concluded about the important role of the institutional component in the implementation of measures to combat shadow operations. Reducing the level of corruption in the country, increasing the efficiency of regulatory authorities, the authors attributed to the main inhibitors of shadowing.

According to, the implementation of shadow operations in all spheres of society requires a diversified approach to the application of mechanisms to de-shadow the economy, based on the characteristics and specifics of the functioning of each industry separately. The author assigns a significant role in these processes to the tax mechanisms, as such, covering all areas of economic development of the country. The author proposes to divide the whole set of tax mechanisms into two groups: hard and soft influence. The implementation of strict mechanisms involves changing the level of tax burden on economic entities, simplifying the system of accrual and payment of taxes, strengthening control over the implementation of tax obligations, and so on. The mechanisms of soft influence include the implementation of measures aimed at improving the level of tax discipline and morale of taxpayers, changing their attitude to tax compliance and government activities.

In general, most experts emphasize that a necessary condition for overcoming this phenomenon is the presence of a comprehensive approach based on balancing the institutional, economic and regulatory components of the mechanism of de-shadowing of the economy. At the same time, the lack of a common understanding of the main components to which the state's priority measures should be directed in the context of de-shadowing of the national economy necessi-

tates their more comprehensive study, substantiation of the reasons for low quality.

The quality of the institutional component of the implementation of the policy of de-shadowing of the economy can be assessed using two groups of methods: direct and indirect. Direct assessment methods are based on the analysis of indicators of international ratings and research results of international organizations. Indirect methods involve the calculation of indicators of the functioning of the economic system in the middle of the country.

One of the indirect methods of assessing the quality of the institutional environment in the country is the assessment of the level of the shadow economy conducted at the state level and the analysis of changes in these indicators in the dynamics.

Given the significant share of the shadow economy in the country, the search for innovative tools to combat illegal operations is the key to improving living standards.

The digitalization of the economy has a significant impact and the level of shadowing in the country. The introduction of digital technologies leads to increased efficiency of financial monitoring and cash flow control processes. Thus, the fact of tax evasion or the implementation of other schemes of concealment of income becomes more obvious.

The introduction of digital technologies allows to strengthen cooperation between the supervisory authorities of several countries in the direction of control over the volume of declared export-import operations in the country.

No less important advantage of digitalization of the economy is to increase the efficiency of regulatory authorities (expanding the list of their services, improving their quality), reducing corruption and promoting shadow withdrawal schemes.

Thus, the modern role of digital technologies in the processes of de-shadowing of the economy is multifaceted, and the effects of their implementation are manifested in all spheres of society: economic (facilitating access to financial resources and control over their flows), social (increasing quality and quantity of public services, improving living conditions); institutional (increasing the efficiency of financial monitoring and control bodies, increasing the level of trust in them).

There is a wide range of interpretations and types of innovative financial technologies in the scientific literature. According to the results of the study, it can be concluded that the spread of innovative financial technologies in public administration policy in general and de-shadowing of the economy in particular has several manifestations. One group of scientists argues about the stimulating effect of innovative financial technologies on the volume of shadow transactions. Digitization of forms and methods of doing business, the growing share of Internet business is an additional catalyst for shadow cash flow, informal employment and more. These issues are becoming particularly relevant in the context of the growing share of electronic financial transactions. This leads to cybercrime, tax evasion, concealment of official income, and so on. In this context, digital shadow transactions are becoming widespread as part of the shadow

economy, involving illegal or shadow Internet trade or services.

According to the second approach, technological innovations in the financial sector, on the contrary, contribute to the reduction of shadow transactions, as the preconditions for controlling the movement of cash in the accounts of economic entities are formed. According to innovative financial technologies are the most important tool for economic progress and bringing subjects out of the shadows. The authors conclude that countries that are actively implementing innovative technologies in the financial sector may implement tools to withdraw funds from the shadows and prevent shadow transactions.

In this regard, the authors develop principles for the formation of a national strategy for the growth of innovative financial technologies, which is based on increasing the investment attractiveness of the country, fighting corruption, increasing transparency, stimulating production, scientific and technological development, establishing relations with international partners, financial literacy of the population. The implementation of these measures will help improve the country's innovation and investment climate, increase its scientific and technological potential, development indicators, including by removing a significant part of assets from the shadows and directing them to finance economic and social programs.

Despite the important role of these technologies in economic development, today the level of financial innovation in most countries is low. Thus, according to the World Bank, the share of research and development expenditures in GDP averages 1.5%. Slovenia and the Czech Republic are the highest, with Ukraine and Romania the lowest at 0.48 and 0.49% respectively.

Thus, most scholars emphasize the important role of digital technologies in the processes of de-shadowing and the importance of using these tools to improve the performance of the formal sector of the economy. The constant change in the vectors of implementation of the policy of de-shadowing of the economy, which affect the country's development indicators, lead to the transformation of the concept of macroeconomic stability and its management tools. Since its inception (since Keynesian times), the definition of macroeconomic stability has been constantly improved, and today most scholars identify macroeconomic stability with the concepts of "economic security", "economic balance", "economic growth", "economic stability" and others.

One of the unexplored aspects of macroeconomic stability is its connection with the effectiveness of the policy of de-shadowing the economy, as an indicator of the ratio of legal and illegal production of goods and services that are deliberately hidden from public authorities in order to:

- – concealment of part of their income or value added;
- – tax evasion;
- – failure to comply with legal requirements for the functioning of the labor market (minimum wage, working hours, labor protection requirements, etc).

Most scientific papers have concluded that there is an inverse relationship between macroeconomic stability and the effectiveness of the policy of de-shadowing the economy. The main argument in favor of this hypothesis is that imbalances in the economy reduce the efficiency and accuracy of developed forecasts, strategies and other programs of economic development in the future, weakens control over the activities of economic entities and the completeness of financial flows in financial statements.

On the other hand, the policy of de-shadowing the economy is seen as a tool to stimulate the growth of macroeconomic stability. Thus, part of the income received in the shadow sector of the economy goes to the official. F. Schneider claims that at least 66% of such income goes to the official sector of the economy.

According to the results of research, we can identify several areas of impact of reducing the level of macroeconomic stability on the volume of shadow financial flows (Table **1**).

Table 1. Directions Causal link Between Macroeconomic Stability and the Shadow Financial Flows.

Decreased Macroeconomic Stability	Increased Macroeconomic Stability
Weakening of control over business entities	GDP growth
Decreased protection of economic competition in the country	Creation of additional jobs, reduction of unemployment
Decrease in the pace of implementation of reforms, including those that are not favorable for business entities	Growth of innovative development of the country due to strengthening of interest of participants of official sector of economy in financing of R&D
Increasing inequality in income distribution, increasing the level of income of individuals, mainly due to participation in shadow transactions	

Source: compiled by the authors.

Thus, the low level of macroeconomic stability in most countries has economic and social consequences both at the level of the individual country and in the world as a whole. One of them is the increase in the share of the shadow sector of the economy, which leads to a violation of the principles of fair competition, material security of the population, compliance with the quality of working conditions and products, and so on.

Coordinated and balanced implementation of these measures is an important component of state regulation of the economy, which contributes to the economic effect both in terms of individual sectors of the economy and in the country as a whole.

2. RESEARCH METHOD

Effective implementation of state measures to reduce the volume of shadow financial transactions is possible only if the coordinated, balanced and quality work of all components of public policy. The basis for the implementation of these measures is the availability of an effective institutional environment for business operations, which forms the basis for its sustainable and stable development.

To date, the quality of the institutional component of the state policy to combat shadowing is at a critically low level. Most of its components do not meet international requirements, do not correlate with the needs of society, and therefore are not able to perform their functions. At the same time, the presence of a significant level of corruption in public bodies only deepens these processes.

The effectiveness of the state policy of prevention of shadowing of the economy is a complex indicator that depends on a combination of factors of endogenous and exogenous nature. In the context of multichannel existing schemes of shadowing of the economy, public policy measures should be characterized by a plurality of components, a significant set of tools and focus on all sectors of the economy. Unfortunately, today, most of the developed programs and activities are local in nature and do not consider the full range of shadow operations. An unfavorable external environment only exacerbates the existing problems and reduces the effectiveness of the implemented reforms. Awareness of the low efficiency of state measures necessitates the identification of the most problematic in terms of implementation of aspects of state regulation of the quality of tax administration and the development of mechanisms to neutralize them.

Determining the effectiveness of the state policy of de-shadowing the economy should include procedures for assessing the quality of tax administration policy. To this end, we will calculate the Index of the Quality of the tax administration policy, which is based on a linear calculation model using the weighted amount method. The basis of this index is to consider four components, weighted by the appropriate weighting factor, in particular:

1) the effectiveness of the institutional component of the implementation of state tax administration (IS) policy is proposed to be assessed as the sum of the products of normalized values of the Ease of Doing Business Index (DB), Corruption Promotion Index (COR), Government Efficiency Index (GE), General Competitiveness Index (TC) and rule of law (RLI);

2) the effectiveness of the social component (SS) of the state policy on tax administration (the sum of the products of normalized values of public spending on education, % of GDP (GSE), gross average monthly wage (MW), unemployment rate (UMR), Human Development Index (HDI)), Gini Index (GI));

3) the effectiveness of the tax policy (TS) of the state (the sum of the products of the normalized values of the tax burden (TB), the index of tax system efficiency (ETSI), the rate of change of the ratio of tax revenues to GDP (RCTR));

4) the effectiveness of the regulatory component (NS) of the state policy of tax administration (the sum of the products of the normalized values of the number of administrative fines and other sanctions (TF), the amount of confiscated property (CP), the amount of confiscated currency (CC)).

The values of international indices calculated by international organizations and individual indicators of social, economic and institutional development of the country will be used as sub-indices that characterize the quality of public policy.

The annual values of the above indicators will be used for calculations.

The evaluation of the integrated index of quality of tax administration will be carried out according to the following formula:

$$IQTAI = w_{IS} \cdot IS + w_{SS} \cdot SS + w_{TS} \cdot TS + w_{NS} \cdot NS \quad (1)$$

where w_i – sub-index i weighting;

I_i – i-th subindex.

Bringing individual indicators of the quality of tax administration within each sub-index to a comparable form will be carried out by normalizing them with a known mathematical expectation and variance.

Determination of weights within each of the sub-indices will be carried out using the Fishburne formula, which has the following form:

$$W_i = \frac{2 \cdot (n - i + 1)}{n \cdot (n + 1)} \quad (2)$$

where n – number of indicators;

i - the rank of indicators determined by the method of expert assessments.

3. RESULTS AND DISCUSSION

The results of the calculation of weights and ranks for each of the indicators are shown in table **2**.

Table 2. Weights of Indicators for Assessing the Quality of Tax Administration Policy.

Indicator	Rank	Weighting Coefficient
Corruption Promotion Index	17.5	0.005597
The level of tax burden	17.5	0.011193
Tax system efficiency index	16	0.019588
Index of Doing business	15	0.019588
Government Performance Index	13.5	0.030781
Rule of law index	13.5	0.030781
Index of general competitiveness	12	0.039176
The amount of administrative fines and other sanctions	11	0.044772
The amount of confiscated currency	9.5	0.053167
The amount of confiscated property	9.5	0.053167
Gross average monthly salary	7.5	0.061561
Unemployment rate	7.5	0.067157
Human Development Index	6	0.072754
Ginny index	5	0.078351
The ratio of the average income of 20% of the richest to 20% of the poorest sections of the population	3.5	0.086745

The ratio of the average income of 10% of the richest to 10% of the poorest sections of the population	3.5	0.086745
The rate of change in the ratio of tax revenues to GDP	2	0.09514
Public spending on education (% of GDP)	1	0.100737

Source: compiled by the authors.

The results of calculations of the quality of tax administration for 11 countries for 2005-2019 (Table **3**) showed that the best quality is the policy of tax administration in Poland, the Czech Republic, Lithuania and Latvia (the values of the integrated quality index for these countries exceed 0.63). At the same time, the policies of Slovakia, Hungary, and Estonia are characterized by the lowest quality. The integrated indicator of the quality of tax administration in Ukraine is the lowest for the entire sample of countries and for the analyzed period did not exceed 0.41.

Analysis of the index of the quality tax administration policy in terms of its main sub-indices indicates the low quality of its institutional component. For example, for Ukraine, the level of effectiveness of the institutional component of the quality of tax administration policy in general does not exceed 0.3 and is one of the lowest in the world. The normative component of the quality of tax administration is characterized by higher values compared to the institutional one, the quality level of which according to the results of 2019 was

0.44.

The low quality of tax administration policy necessitates the implementation of priority measures aimed at improving its level in the context of the policy of de-shadowing the economy and improving its macroeconomic stability.

In these measures, the definition of the components of tax administration that have the greatest impact on the functioning of the economy is of paramount importance.

Using the modified least squares method, we will analyze the impact of individual components of the integrated indicator of the quality of tax administration on the level of the shadow economy and macroeconomic stability of the country (Table **4**). The obtained results testified to the significant influence of the institutional component and efficiency of tax policy construction on the effectiveness of the policy of de-shadowing the economy and increasing its macroeconomic stability.

An increase in the government efficiency index by 1% leads to a decrease in the level of the shadow economy by 1.14% and an increase in macroeconomic stability by 1.23%; growth of the Tax System Efficiency Index - by 1.34% and 1.26, respectively. The driver of increasing the country's macroeconomic stability and reducing the shadow economy is to improve the institutional component of tax administration policy (strengthening control over economic entities, improving the system of financial monitoring and control, improving tax discipline of taxpayers, increasing their legal culture and morals, implementation of measures to promote

Table 3. The Quality of Tax Administration in the World.

	Ukraine	Poland	Czech Republic	Slovakia	Slovenia	Romania	Hungary	Croatia	Lithuania	Latvia	Estonia
2005	35.32	56.72	63.64	50.78	49.18	54.51	52.76	51.37	57.92	67.62	52.76
2006	38.82	62.34	69.95	55.81	54.05	59.91	57.99	56.46	63.66	74.33	57.99
2007	39.53	63.48	71.22	56.83	55.04	61.00	59.05	57.49	64.82	75.68	59.05
2008	39.89	63.59	71.52	57.13	55.28	61.29	59.37	57.69	65.01	75.94	59.37
2009	41.31	64.39	71.89	57.51	55.59	61.64	59.76	57.93	65.26	76.26	59.76
2010	41.53	64.89	72.48	58.11	56.05	62.20	60.38	57.32	65.64	76.76	60.38
2011	40.43	65.54	72.48	58.11	56.05	62.20	60.38	58.52	65.64	76.77	60.38
2012	40.38	65.30	72.31	57.94	55.93	62.04	60.22	58.41	65.54	76.62	60.22
2013	40.37	65.58	72.64	58.27	56.19	62.35	60.56	58.43	65.76	76.90	60.56
2014	40.20	65.62	72.69	58.32	56.23	62.39	60.60	58.45	65.78	76.94	60.60
2015	40.93	65.83	72.94	58.58	56.44	62.64	60.88	59.02	65.95	77.16	60.88
2016	41.12	66.32	73.51	59.15	56.89	63.18	61.47	59.32	66.32	77.65	61.47
2017	40.97	66.16	73.34	58.98	56.75	63.01	61.29	59.27	66.21	77.49	61.29
2018	40.83	65.83	72.94	58.58	56.44	62.64	60.88	59.68	65.95	77.16	60.88
2019	41.69	67.21	74.47	59.81	57.63	63.96	62.16	60.93	67.34	78.78	62.16

Source: compiled by the authors.

Table 4. The Results of the Modified Least-Squares Regression Approach.

Indicator	Slovakia		Slovenia		Romania		Hungary		Croatia		Estonia	
	SE	MEC	SE	MEC	SE	MEC	SE	MEC	SE	MEC	SE	MEC
DB	-0.011	0.023	-0.011	0.028	-0.012	0.053	-0.015	0.030	-0.012	0.029	-0.012	0.025
COR	-0.001	0.024	-0.005	0.024	-0.006	0.046	-0.001	0.026	-0.001	0.025	-0.001	0.026
GE	-0.016	0.014	-0.019	0.023	-0.021	0.023	-0.018	0.019	-0.015	0.014	-0.017	0.015
TC	-0.002	0.037	-0.003	0.050	-0.003	0.050	-0.003	0.043	-0.002	0.041	-0.002	0.041
RLI	-0.014	0.035	-0.018	0.093	-0.021	0.047	-0.017	0.052	-0.014	0.036	-0.015	0.038
GSE	-0.002	0.024	-0.009	0.037	-0.024	0.039	-0.006	0.030	-0.005	0.025	-0.002	0.026
MW	-0.026	0.034	-0.027	0.045	-0.035	0.041	-0.037	0.037	-0.030	0.033	-0.028	0.037
UMR	-0.024	0.035	-0.032	0.038	-0.043	0.035	-0.032	0.033	-0.026	0.029	-0.026	0.038
HDI	-0.019	0.016	-0.026	0.018	-0.037	0.026	-0.029	0.026	-0.025	0.016	-0.021	0.017
GI	-0.009	0.002	-0.012	0.003	-0.018	0.003	-0.012	0.003	-0.010	0.002	-0.010	0.002
TB	-0.012	0.037	-0.019	0.041	-0.032	0.048	-0.020	0.043	-0.017	0.034	-0.014	0.041
ETSI	-0.024	0.015	-0.024	0.020	-0.039	0.024	-0.038	0.018	-0.032	0.014	-0.026	0.016
RCTR	-0.024	0.037	-0.027	0.044	-0.034	0.042	-0.033	0.044	-0.027	0.041	-0.026	0.041
TF	-0.027	0.014	-0.027	0.019	-0.036	0.016	-0.037	0.021	-0.030	0.015	-0.030	0.015
CP	-0.017	0.001	-0.019	0.001	-0.023	0.002	-0.026	0.002	-0.020	0.001	-0.018	0.001
CC	-0.017	0.026	-0.017	0.024	-0.028	0.027	-0.024	0.032	-0.019	0.029	-0.018	0.028
IQTA	-0.016	0.023	-0.018	0.032	-0.025	0.033	-0.021	0.027	-0.018	0.024	-0.016	0.025

Source: authors calculations.

the importance of tax compliance, while inhibitors - high levels.

4. CONCLUSIONS

The established interdependencies allow to determine a set of priority measures aimed at increasing the level of efficiency of the state policy of prevention of shadowing of the economy, including in terms of its tax component. This is the main prerequisite for increasing the level of macroeconomic stability of the country, increasing its financial potential, investment attractiveness, improving the functioning of the social sector of the economy and more.

On the basis of generalization of the most widespread approaches to realization of mechanisms of de-shadowing of economy and considering modern features of realization by economic subjects of shadow activity it is possible to allocate the following measures of influence of the state on economic subjects:

Optimization of the level of tax burden. Excessive tax burden is considered as one of the main catalysts of shadow operations. A significant number of scientists identify lower rates on basic taxes and fees, a revision of the list of tax benefits and transactions that are exempt from taxation by the most important measures to de-shadow the economy and reduce incentives for taxpayers to minimize their tax liabilities.

At the same time, in this context, it is important to consider the role of tax payments in ensuring the stability of the economy. Tax revenues are one of the most important sources of funding for government spending in the country, and therefore reducing their volume can threaten the stability of the economy and reduce its security.

Improving the institutional component of the mechanism of de-shadowing of the economy. The high level of corruption, bureaucracy in the country, the presence of a significant amount of shadow operations, which are carried out with the direct assistance of the authorities, only deepen the existing economic imbalances in the country and the problem of high shadowing. The most common measures in this direction include: strengthening control over the activities of economic entities, improving the system of financial monitoring and control; improving the regulatory framework governing the activities of economic entities, increasing the transparency and impartiality of the judicial system, strengthening control over the implementation of court decisions; reducing the level of corruption;

3) At the present stage, one of the tools to increase the level of macroeconomic stability of the country and reduce the level of the shadow economy is to increase the level of its digitalization, in particular: increasing the volume of electronic payments; introduction of an open e-government system; introduction of an electronic document management system. It is digitalization that has a positive effect on the

quality of the business environment in the country, facilitates access to services, accelerates the movement of funds, ensures the growth of economic development of the country.

4) Increasing the level of tax discipline of taxpayers, the growth of their legal culture and morals; implementation of measures to promote the importance of compliance with tax legislation;

5) Increasing the macroeconomic stability of the country. Macroeconomic stability is a component of the security of the national economy and combines the main characteristics of its financial, production, political, investment, innovation and budget components.

DECLARATION OF COMPETING INTEREST

The authors declare that they have no any known financial or non-financial competing interests in any material discussed in this paper.

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