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ECONOMETRIC ANALYSIS OF FINANCIAL SECURITY AND FACTORS AFFECTING IT

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ABSTRACT

The article explores the concept of tax discipline as an economic category from a scientific and theoretical point of view. It aims to study the issue of strengthening tax discipline in ensuring financial security of the country as well. Furthermore,the article investigates a developed mathematical apparatus using the method of econometric assessment of the impact of tax discipline on financial security- ***ARDL*** (autoregressive distributed lag) and their coefficient of long and short term dependence.

Keywords: finance, financial security, tax, tax discipline, fiscal policy, budget.

INTRODUCTION

Ensuring financial security is an important task of any state, because the independence of the country and its role in the international arena depends on its level of economic development. The level of development of economic relations is inextricably linked with the level of financial security. Ensuring the financial security of the country is one of the necessary factors of economic development at the stage of modern development of the economy of the Republic of Uzbekistan. The Actions' Strategy for the five priority areas of development of the Republic of Uzbekistan for 2017-2021 [1] states that strengthening macroeconomic stability and maintaining high economic growth rates is a prerequisite for sustainable development of the country's economy in the medium term.

Various researchers have leaded investigations on the current issue based on the logical transformation of economic relations, the logical transformation of financial relations, the transformation of different types of views of the concept of economic security. Economic security deals with the three basic types of security:

- financial security,
- tax security,
- investment security.

The status of these concepts has been commented by different kinds of financial experts and economists. In particular, N.N. Kaurova defended her dissertation on the study of financial and economic security [2], E.V. Karanina worked on the study of financial security [3], O.A. Mironova conducted experiments on the study of tax security [4], E.L. Kuzina researched the study of ecological and economic security [5], T.M. Vorozheykina and E.I. Kendyukh conductedthe research of food security problems [6]

There are also a number of authors who have studied security issues in public administration and various sectors of the economy [7]. It should be noted that one of the important factors in ensuring the implementation of fiscal functions of the state or a positive impact on the formation of the financial basis of socio-economic development are the strengthening of tax discipline [11,12]. If the level of compliance with tax discipline is higher, it is easier to perform fiscal tasks [13,14].

Conversely, the lower the level of compliance with tax payment discipline, the more difficult it is to perform fiscal tasks for financial security purposes [15].

Today, the issue of financial security has become one of the most pressing issues on the agenda of all political, economic and scientific circles. It is not only aimed to improve cases at the global scale, but also it is aimed at ensuring the stability of the world economy.

As a result of global economic integration, financial security has become a focus of the activities of influential international financial institutions, and measures are being taken to maintain financial stability through various economic and political supports.

H. Schubertta, a professor at the Massachusetts Institute of Technology, studied the impact of tax discipline on financial security in his research. And he drew several conclusions regarding the current topic. He confirmed that the risk of financial crisis in countries with low tax discipline is high.

MATERIALS AND THE APPLIED METHODS

According to the joint program of the International Monetary Fund and the World Bank to assess the stability of the financial sector, measures to ensure the country's financial security are based on the level of development of the financial sector and its integration into the global financial environment [8].

In particular, implementations of new rules and laws,financial security, financial matters, foreign exchange, internal and external markets in developed countries and financial services including banking, insurance and intermediation services are considered to ensure the stability of the financial market and the banking system. Here it should be mentioned that fiscal stability is supposed to be the main criterion of economic security in many developed and developing countries.

The International Monetary Fund's new edition of Financial Stability Indicators also focuses on financial security. It has noted vehemently that fiscal security, especially a balanced state budget is a priority in the transition period of the countries in developing and developed countries [9].

In addition, a situational analysis by the Asian Development Bank (ADB) found that with the advent of the Asian financial crisis in 1997and the global financial crisis which broke out in 2008, China, Japan, and South Korea were members of the organization's financial security system. It was confirmed that a severe financial and economic crisis had occurred as a result of the incorrect selection of the indicators obtained and approaches of several countries to deal with the recession and economic crises [10].

Budget revenues decreased as a result of the severe consequences of the crisis. Severe financial difficulties of enterprises have also caused mushroomed budget. On the other hand, due to a sharp rise in unemployment, population growth and the need for protection of welfare

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and healthcare increased the budget deficit. However, the financial security system focused more on

- monitoring the stock market
- the banking system
- macro-economic indicators than budget indicators.

Here it should be noted that after the global financial and economic crisis, when the shortcomings of the global financial security system became apparent, international organizations and governments began to work together to develop a new system of indicators it was the procedure that required countries to have joint-ventures and in a harmony exchanging ideas sharing the reasons of past mistakes.

As a result, a system of early warning signals, safety nets, risk reduction and cushioning systems has been introduced to prevent financial risks at the international and national levels. It is managed by the International Monetary Fund efficiently. All of these included financial market, banking and macroeconomic indicators, as well as fiscal indicators.

Taking into account the above considerations and conclusions of scientific and analytical work, the massive researches regarding the current topic created an econometric model of indicators that affect the financial security of our country.

These models help to take into account the specifics of our national economy. Our country is gradually transitioning to a market economy. It is a rapidly developing economy. To do this, we first separated the free and free variables and made the following functional relationship.

$$FSE = f(TDS, BRV, BEX,\ PDB) \quad (1)$$

Here: FSE - level of financial security (budget equilibrium)
TDS - level of compliance with tax discipline
BRV - the dynamics of the volume of budget revenues
BEX - the dynamics of the volume of budget expenditures
PDB - the dynamics of state and state-guaranteed debt.

The econometric analysis was performed using the ***ARDL*** (autoregressive distributed lag) method because it did not require the studied variables to be in the same order, was suitable for use in small and finite periodic data analysis, and allowed long-term and short-term correlation to be evaluated simultaneously.

According to ***Pesaran's*** rule, the function (1) is expressed in the form of an unrestricted error ***grinding model (UECM)*** of the ***ARDL*** test:

$$\Delta \ln FSE_t = \varphi_0 + \sum_{i=1}^{p} \varphi_1 \Delta FSE + \sum_{i=0}^{p} \varphi_2 \Delta \ln TDS_{t-i} + \sum_{i=0}^{p} \varphi_3 \Delta \ln BRV_{t-i} +$$
$$i{=}0p\varphi 4\Delta \ln BEXt{-}i{+}i{=}0p\varphi 5\Delta \ln PDBt{-}i{+}\beta 1lnFSEt{-}1{+}\beta 2lnTDSt{-}1{+}\beta 3lnBRVt{-}1{+}\beta 4lnBEXt{-}1{+}\beta 5lnPDBt{-}1{+}ut \quad (2)$$

The method of analysis was selected, its mathematical formula (2), and then the model hypothesis was constructed. The zero hypothesis that there is no cointegration between financial security and tax discipline is expressed as follows:

$$H_0: \varphi_1 = \varphi_2 = \varphi_3 = \varphi_4 \quad (3)$$

An alternative hypothesis suggesting that there is a cointegration between financial security and tax discipline is expressed as follows:

$$H_a: \varphi_1 \neq \varphi_2 \neq \varphi_3 \neq \varphi_4 \qquad (4)$$

Prior to performing the direct ***ARDL test***, unit variable root tests were performed on the variables in the extended ***Dickey-Fuller and Phillips-Perron*** methods to determine steady state, so that all variables were found to be stationary in the first order under the dependency test conditions.

In the next step, we check the existence of a cointegration relationship between the variables using ARDL bonds. To do this, we calculated the F-statistical value for the econometric model variables we constructed.

Table 1.

Level correlation test between variables in the ARDL model

F-statistics	95% lower limit	95% upper limit
6.5651	5.4183	6.6854

Microfit 5.0 was calculated in an econometric analysis program.

If the F-statistical value is greater than the upper limit value, the zero hypothesis indicating that there is no effect of degree dependencies is rejected. The result of the correlation test we performed showed that the F-statistic was greater than the upper limit of the critical value in the confidence interval of 0.05. The zero hypothesis was rejected and an alternative hypothesis was adopted.

Once the presence of cointegration was proved using the F-test, the long-term linkage was determined using the conditional ARDL model.

$$lnFSE_t = \varphi_0 + \beta_1 lnFSE_{t-1} + \beta_3 lnTDS_{t-1} + \beta_3 lnBRV_{t-1} + \beta_3 lnBEX_{t-1} + \beta_4 lnPDB_{t-1} + u_t$$

Table 2.

Long-term dependence in the ARDL model

Optional variable: LogFSE			
Variables	Coefficient	Stan. error	T-ratio [approximately]
LogTDS	.226891	.042654	2.518[.024]
LogBRV	.015858	.006114	2.557[.024]
LogBEX	-.014814	.179928	-3.662[.002]
LogPDB	.004340	.027955	2.568[.024]

ARDL (1,0,0,1) was selected based on the Akaike data criterion. It was alculated in Microfit 5.0 econometric analysis program.

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RESULTS

We paid special attention to the use of advanced econometric methods in the development of economic mathematical model. And additionally we have analyzed the impact of tax discipline on financial security in the method of cointegration and autoregressive distributed lag. According to the findings of our research, the following results were obtained (Table 2-3):

In the ARDL model given in Table 2, the result of the long-term dependence check is the coefficient of compliance with the tax discipline.

It showed a significant positive impact on financial security with a 5 percent probability. If the remaining factors remain unchanged, a 1 percent increase in the tax discipline compliance coefficient (0.226891) will result in an economic increase of 0.22 percent. The dynamics of budget revenues (0.015858) also had a positive impact on economic growth, with a 1% increase in it leading to an increase in the level of financial security by almost 0.016%.

The econometric model for the short-term coupling test is presented in the following form, which includes elements of an error correction mechanism:

$$\Delta lnFSE_t = \varphi_0 + \sum_{i=1}^{p} \varphi_1 \Delta lnFSE_{t-i} + \sum_{i=0}^{p} \varphi_2 \Delta lnTDS_{t-i} + \sum_{i=0}^{p} \varphi_1 \Delta lnBRV_{t-i} + \sum_{i=0}^{p} \varphi_1 \Delta lnBEX_{t-i} + \sum_{i=0}^{p} \varphi_1 \Delta lnPDB_{t-i} + \delta ECM_{t-1} + u_t$$

Table 3.

Short-term correlation and error correction mechanism

Free variable: dLogFSE			
Variable	**Coefficient**	**Stan. Error**	**T-ratio[approximately]**
dLogTDS	.698872	.2216403	3.1316[.007]
dLogBRV	.035964	.0091687	3.9044[.002]
dLogBEX	.004611	.0019784	2.1989[.041]
dLogPDB	.004611	.0019784	2.1989 [.041]
dTREND	.001796	.8188E-3	2.2102[.045]
ecm(-1)	-.72973	.180241	-4.1428[.001]
ecm = LogFSE -.212875*LogTDS -.049511*LogBRV - .014987*LogBEX+ .039127*INPT -.002502*TREND			
Squares of leftovers	.86877	R-Bar-square	.80820
Standart error of regression	.0091550	F-statistics (5.14)	17.2126[.000]
Arithmetic average degree of free variable	.0030500	Involuntary change. standard deviation	.020904
The proximity of the logarithm to	69.7981	Schwartz Baes criterion	59.3130

reality			
Squares of leftovers	.0010896	Akaike criterion	62.7981
Darbin-Watson statistics	2.3926		

ARDL (1,0,0,1) was selected based on the Akaike data criterion. It was alculated in Microfit 5.0 econometric analysis program.

Based on the results of the above study, Table 3 presents the short-term dynamic coefficients derived from the error correction model. The short-term dynamic dependence is fully consistent with the long-term dependence characteristics.

The error correction model coefficient (-0.72973), calculated with a probability of 5 percent, is relatively significant. Furthermore, it shows the signs of rapid variability. Nearly 73 percent of the imbalances that occurred in the previous year will affect the long-term balance in this year.

The level of tax discipline was financially related to financial security by 0.7%, the dynamics of budget revenues by 0.04%, and the dynamics of budget expenditures and public debt by a factor of 0.004. If we pay attention to the results of the analysis, it becomes clear that the tax discipline has a positive role in the long-term and short-term dependence on the financial security of our republic.

DISCUSSION

Above we have built an econometric model of the impact of tax discipline on financial security. For the first time, the level of financial security (budget balance) was analyzed econometrically through indicators such as the level of compliance with tax discipline, the dynamics of budget revenues, the dynamics of budget expenditures, the dynamics of state and state-guaranteed debt.

It should be noted that such econometric analyzes in this area have not been sufficiently studied in practice. In some scientific articles, we can observe that the concept of tax discipline. The issue of tax discipline has been studied in terms of the role and importance of financial security in economic security [2,3,11]. The range of the studies and thoroughness are also limited by the scientific and theoretical aspects of most authors' research work [4,5,7].

Therefore, in today's globalization, one of the main problems of any country remains the issue of financial security, which means that in this regard, it is important to further develop research on this topic of our choice. It should be noted that in most cases it is limited to a theoretical approach to the study of problems. The study of any problem must necessarily have a mathematical apparatus.

CONCLUSION

1. Since financial security is an integral part of economic security, the understanding of its essence at the enterprise level is a ***synthesized concept*** that embodies the basics of economic security and financial management. Financial security is a condition for sustainable and secure development. It is a system of interconnected sets of elements based on the stratification and dynamics of supply indicators. Financial security is a typological type of

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economic security, in which economic security is an integral part of national security; identification of financial security threats can be identified for all levels of financial security.

2. According to the rules of socio-economic systematization, "*tax discipline is a set of procedures aimed at ensuring the timely and orderly receipt of taxes and other mandatory payments to the budget on a voluntary basis through the joint growth of the subjects of tax relations on a unified organizational and legal basis. It is a set of measures*."

3. The high or low real state of compliance with tax discipline is directly related to the level of *indebtedness* to the tax budget, and the lower the debt, the higher the compliance with tax discipline will be. Therefore, the level of compliance with tax discipline is influenced by the following factors:

- ✓ the correct organization of tax payment by taxpayers;
- ✓ development of taxpayers' tax culture;
- ✓ transparency of the tax system for taxpayers
- ✓ stability of tax legislation;
- ✓ sufficient improvement of the system of interdepartmental information exchange;
- ✓ organization of efficient and quality service to taxpayers.

4. Tax risk is a risk that may arise in the course of the activities of entities involved in tax relations in the performance of their obligations and cause financial losses to taxpayers.

5. The fiscal imperative of state regulation of tax relations is a resource factor of the state in the "taxes and tax system" as a result of taking into account the objective economic opportunities of taxpayers and the degree of impact of the tax burden on the financial condition of businesses, the degree of discipline of economic behavior and from a mere tool of influencing socio-economic processes to a *"real threat to economic security for all economic entities".*

6. The content of important requirements and conditions substantiating the need for tax discipline and its observance is reflected like in the following. The participants of tax relations require the provision of the fiscal base for public financial security within the tax legislation and the growth and stability of tax discipline on a voluntary basis.

7. Tax planning is a type of financial planning established by law to reduce taxes and mandatory deductions and to fulfill tax obligations in the prescribed manner, using the benefits provided by law and other legal methods of reducing tax liabilities.

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