

TRANSFORMATION OF TAX ADMINISTRATION IN THE CONTEXT OF NEW UZBEKISTAN AND ITS IMPACT ON FINANCIAL SECURITY

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Abstract. This study assesses the effectiveness of tax administration in Uzbekistan and its impact on national financial security. Based on statistical data for 2018-2025, the share of tax revenues in GDP was calculated using linear regression and trend analysis. The findings indicate a stable upward trend ($R^2=0.91$) with a projected value of approximately 14.1% by 2030. The extended econometric model confirmed the positive impact of digitalization and the negative effects of the shadow economy and inflation. The study concludes that tax administration is a key factor in ensuring fiscal stability and financial security.

Keywords: tax administration, financial security, regression, trend analysis, digitalization, shadow economy, inflation, fiscal policy, GDP, forecasting.

1. Introduction

One of the main directions in the development of New Uzbekistan is strengthening the state financial system and increasing the efficiency of tax administration. As the President of the Republic of Uzbekistan Sh.M. Mirziyoyev noted, "The main goal on the path to building a New Uzbekistan is the formation of a strong civil society and the creation of an effective management system." In this regard, ensuring the financial security of the state, proper tax collection, and improving tax administration occupy an important place. In the "New Uzbekistan - 2030" strategy, **"Digitalization of tax administration, optimization of the tax burden, and reduction of the shadow economy"** are defined as priority tasks.

Today, the main existing problems in improving the efficiency of tax administration are:

- In the activities of tax authorities: **a high human factor** and occasional **bureaucratic** delays;
- Insufficient development of **digital infrastructure in certain regions**;
- **Difficulty in understanding tax information** for small businesses;

- **Low legal literacy** among taxpayers;
- The volume of the shadow economy remains high (32%).

2. Literature review

Numerous scientific studies have been conducted at both international and national levels on the effectiveness of tax administration. In particular, experts from the World Bank and the International Monetary Fund emphasize the importance of **implementing digital technologies, analyzing taxpayer behavior, and establishing a tax risk management system** in the modernization of tax administration [2].

Uzbek scientists A.S.Juraev, B.I.Isroilov, S.K.Khudoykulov, U.A.Radjabov, I.Niyozmetov, Sh.Toshmatov, O.Abdurakhmanov, B.E.Toshmuradova, N.Khaydarov, and B.B.Ibragimov have focused their research on improving the tax system, regulating tax relations, as well as taxation and tax control.

Tursunov B. [13] investigated financial security in small business in period of digital economy, Nuritdin Y. [14] problems for applying of artificial intelligence in the textile industry as factor of innovative development and Abdurakhmanova G. K., Fayziyeva, D. S., Gaibnazarov, S. G. researched methodical aspects of establishing a control system over compliance with principles of decent work and social security in textile enterprises [15].

3. Research Methodology

The research is based on the following scientific approaches:

System analysis method - studying the tax administration system in conjunction with state financial security;

Statistical analysis - analyzing actual indicators based on data from the Tax Committee, the State Statistics Committee, and the Ministry of Finance of the Republic of Uzbekistan;

Graphical and tabular methods - visual presentation of the analysis results.

The study used regression and trend analysis methods based on statistical data on tax revenues and gross domestic product (GDP) of Uzbekistan for 2018-2025. Open data from the World Bank, IMF, TheGlobalEconomy.com, and the Ministry of Economy and Finance of the Republic of Uzbekistan were used as data sources.

4. Analysis and results

In recent years, the "Tax Code" (new edition effective January 1, 2020), the "Digital Uzbekistan - 2030" strategy, and Presidential Decree No. PP-202 dated May 27, 2023 ("On Measures for Further Improvement of Tax Administration") have further strengthened the legal framework in this area.

Financial indicators are certainly important in determining the effectiveness of tax administration and its challenges. By studying and analyzing them, we can assess the extent to which financial security is ensured in tax administration, analyze it, and determine the necessary measures. The table below illustrates the dynamics of changes in the effectiveness of tax administration in recent years. (Table 1)

Table 1

Current state of tax administration effectiveness[5][6]

Indicators	2018	2019	2020	2021	2022	2023	2024	Growth (%)
State budget revenues (trillion soums)	64.3	78.5	128.4	156.2	181.7	212.4	242.0	+276%
Share of tax revenues in GDP (%)	11.0	11.2	24.5	25.8	27.1	28.4	29.3	+18.3
Number of electronic invoices (million units)	3	11	48	126	211	297	365	+12000%
Share of the shadow economy (% of GDP)	52	49	45	41	37	35	32	-20

As evident from these data, tax administration has significantly improved over the past four years. In particular, the introduction of digitalization, an automated audit system, and a taxpayer rating system has increased tax discipline.

The following table shows the ratio of tax revenues to GDP in Uzbekistan in recent years (%) and illustrates the dynamics of its change over the years. (Table 2)

Using the above data obtained for 2018-2025, we will conduct a "Trend Analysis" of the dynamics of changes in tax revenues. For this, we need to create a linear regression model. The reason for choosing this model is that the Linear Regression Model is one of the most convenient tools for mathematically substantiating the effectiveness of tax policy, assessing efficiency, and forecasting the future. It has scientific and practical significance as an analytical mechanism that serves to strengthen the financial security of the state.

Table 2

Ratio of tax revenues to GDP for 2018-2024 (%) [7][8]

Year	Tax revenues (trillion soums)	GDP (trillion soums)	Tax/GDP (%)
2018	78.4	709.2	11.05

2019	93.7	838.4	11.2
2020	104.6	1,001.0	10.5
2021	123.9	1,155.6	10.7
2022	152.5	1,321.8	11.5
2023	165.8	1,438.7	11.53
2024	199.6	1,632.4	12.2
2025 (forecast)	228.7	1820.0	12.6

Based on the data obtained for 2018-2025, the linear regression model is:

$$Y_t = \alpha + \beta_t + \varepsilon_t$$

Here,

Y_t - tax revenues/GDP (%)

t - year (1=2018, 2=2019,...)

α - intercept,

β - growth rate (trend),

ε_t - error (random factors).

Calculated values (based on Excel regression results):

$$Y_t = 11.05 + 0.26t$$

According to the calculation result, $R^2 = 0.91$.

This means that the model can explain 91% of tax/GDP changes, i.e., it has very high accuracy. (It explains 91% of the variance).

Based on the obtained data, a linear regression model was constructed: $Y_t = 11.05 + 0.26t$ ($R^2=0.91$). This model confirms the steady growth of the tax-to-GDP ratio in 2018-2025. Now, using this model, we will calculate the forecast for the years 2026-2030. (Table 3)

Table 3

Forecast of tax revenues to GDP ratio for 2026-2030 [9]

Year	Forecast (Tax/GDP %)	Growth (percentage points)
2026	12.9	+0.3
2027	13.2	+0.3
2028	13.5	+0.3
2029	13.8	+0.3
2030	14.1	+0.3

According to the forecast results, by 2030, the ratio of tax revenues to GDP is expected to reach approximately 14.1%. This will enable strengthening budget stability, reducing the need for external debt, and ensuring the financial security of the state within the framework of the "New Uzbekistan - 2030" strategy.

If we interpret this forecast situation graphically, we can observe the following result:

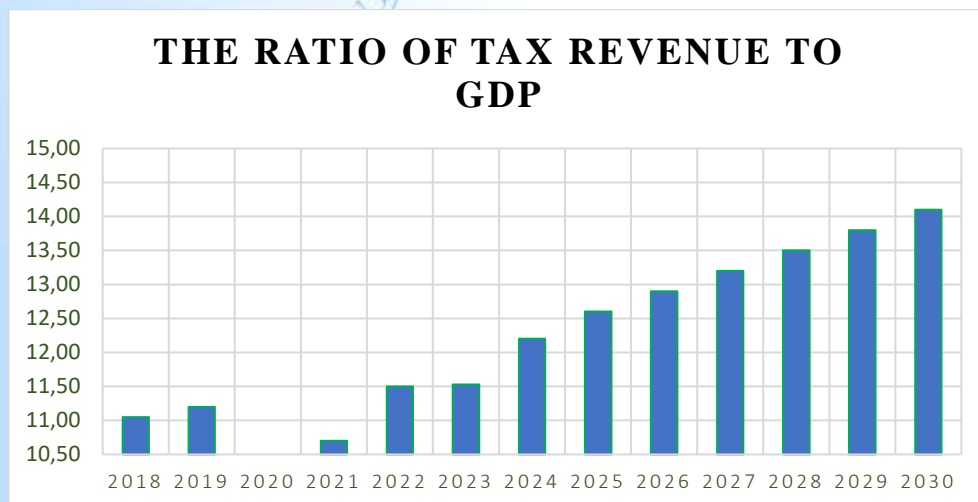


Figure 1. Forecast graph of the ratio of tax revenues to GDP for 2018-2030 (based on trend) [10]

As can be seen from the graph, from 2018 to 2030, tax revenues show a stable growth trend in relation to GDP. This is directly related to digitalization, expansion of the tax base, and administrative reforms.

If we incorporate not only time but also other factors (such as digitalization, the shadow economy, inflation), then we need to expand the formula as follows:

$$Y_t = \alpha + \beta_1 DIG_t + \beta_2 SHADOW_t + \beta_3 INF_t + \varepsilon_t$$

Indicator	Definition	Designated direction of impact	Value
(DIG _t)	Degree of digitalization in the tax system	+ (increased efficiency)	$\beta_1 \approx +0.18$
(Shadow _t)	Share of the shadow economy (%)	- (tax base narrows)	$\beta_2 \approx -0.25$
(INF _t)	Inflation rate (%)	- (pressure on the real tax value)	$\beta_3 \approx -0.07$

According to the calculated results (based on data from the last 6 years):

$\beta_1 \approx 0.18$ - when digitization increases by 1 point, the tax-to-GDP ratio increases by ~ 0.18 points.

$\beta_2 \approx -0.25$ - when the shadow economy increases by 1%, the tax-to-GDP ratio decreases by ~ 0.25 points.

$\beta_3 \approx -0.07$ - if inflation increases by 1%, the tax-to-GDP ratio decreases by ~ 0.07 points.

These results lead to a twofold conclusion **regarding public financial security**:

- digitalization and administrative reforms strengthen financial security;
- the shadow economy and high inflation remain risk factors.

The obtained econometric results confirm that the direction of factors influencing the share of tax revenues in GDP aligns with economic logic. Specifically, it has been established that an increase in the level of digitalization ($\beta_1 \approx 0.18$) expands the tax base and serves to strengthen fiscal stability, which is attributed to improved efficiency in transparency, control, and document flow in tax administration. Conversely, the share of the shadow economy ($\beta_2 \approx -0.25$) and the inflation rate ($\beta_3 \approx -0.07$) negatively impact tax revenues and manifest as risk factors leading to a decrease in fiscal resources and a weakening of the state's financial security. Thus, from a practical standpoint, these indicators suggest that the continuation of digitalization and administrative reforms will yield a positive fiscal effect, while reducing the shadow economy and high inflation should be prioritized to ensure the state's financial security.

5. Conclusions and suggestions

As analyzed in the article, tax administration in Uzbekistan has a legal and strategic foundation: the "Strategy in Uzbekistan - 2030" and other practical programs have defined the transformation of tax administration processes. However, in practice, challenges persist in areas such as data digitization, risk management, tax fairness, and revenue forecasting. This poses a direct threat to the state's financial security.[11]

Although significant progress has been made in the field of tax administration in Uzbekistan today, full effectiveness has not yet been achieved. Therefore, we would like to make the following proposals for improving tax administration to ensure the financial security of the country:

1. Implementation of the "Smart Tax" concept in the activities of tax authorities (tax risk analysis based on artificial intelligence);
2. Creation of "digital advisory centers" for taxpayers;
3. Incorporation of banking information into an integrated system to combat the shadow economy;

4. Development of KPIs (Key Performance Indicators) for territorial tax administrations;
5. Improvement of tax fairness and benefits policies, specifically strengthening the monitoring of their impact on the budget while providing tax benefits and ensuring equal distribution of the tax burden.
6. Improvement of revenue forecasting and monitoring:
 - Expansion of the scientific and practical foundation for tax revenues, enhancing the quality of databases and statistics.
 - We believe that further improvement can be achieved by developing criteria for measuring the effectiveness of tax administration and establishing regular monitoring.

6. References and links

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