IMPROVING THE MECHANISMS FOR REDUCING TAX ARREARS IN UZBEKISTAN

MIRPULATOV JAHONGIR MUZAPPAROVICH
Researcher at the Banking and Finance Academy of the Republic of Uzbekistan

Abstract. Tax arrears represent a significant challenge to fiscal sustainability, budget revenue stability, and the effectiveness of tax administration. Their accumulation reflects not only taxpayers' failure to fulfil tax obligations on time but also the effects of liquidity constraints, institutional inefficiencies, limited tax awareness, and weaknesses in compliance management. This article examines the theoretical foundations, economic determinants, and institutional mechanisms of tax arrears reduction in Uzbekistan. It draws on international tax administration practices, behavioural economics, compliance risk management, and digital transformation to develop an integrated approach to preventing and managing tax arrears. Particular attention is paid to risk-based taxpayer segmentation, automated payment notifications, the integration of tax administration systems with electricity billing infrastructure, public disclosure of information on the use of tax revenues, performance-based incentives for mahallas, and the use of social information campaigns. The article also proposes a comprehensive Tax Discipline Index to assess regional tax compliance by combining arrears indicators with selected tax revenue indicators. The findings support a transition from predominantly enforcement-oriented debt collection towards a preventive, data-driven, transparent, and taxpayer-oriented model. The proposed measures could contribute to higher voluntary compliance, improved collection efficiency, and stronger public confidence in the tax system, provided that their implementation is supported by appropriate legal safeguards, data protection, and transparent performance evaluation.

Keywords: tax arrears, tax administration, tax compliance, fiscal sustainability, voluntary compliance, digital taxation, compliance risk management, Tax Discipline Index, behavioural economics, public finance, Uzbekistan.

Tax arrears have become an increasingly important concern for governments seeking to maintain stable public revenues while ensuring the efficient allocation of fiscal resources. The accumulation of unpaid tax liabilities reduces the predictability of budget revenues, complicates expenditure planning, increases collection costs, and may undermine confidence in the fairness of the tax system. In contemporary public finance, therefore, tax arrears should not be considered merely as a stock of overdue payments. They also provide information about taxpayers' financial capacity, the quality of tax administration, the effectiveness of institutional arrangements, and the relationship between citizens and the state. An effective strategy for reducing arrears consequently requires a combination of economic analysis, institutional reform, digital innovation, preventive intervention, and proportionate enforcement.

The international scale of this problem demonstrates its importance. According to the OECD's *Tax Administration 2025*, the total amount of outstanding tax and other revenue arrears administered by the surveyed tax authorities at the end of fiscal year 2023 was approximately EUR 2.7 trillion, of which around EUR 990 billion was classified as collectible. The distinction between total and collectible arrears is essential because some outstanding liabilities are disputed, legally unrecoverable, or impossible to collect owing to the debtor's lack of financial resources or assets. These figures illustrate why the effectiveness of tax debt management should be evaluated not only by the nominal amount of outstanding liabilities but also by their age, recoverability, composition, and the cost of collection (OECD, 2025). <Cite refs={["turn522929search0","turn522929search4"]}/>

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The theoretical foundations of tax compliance have developed considerably over time. Classical economists, including Adam Smith and David Ricardo, examined taxation in relation to public revenue, economic incentives, and the allocation of resources. Smith's principles of taxation emphasised certainty, convenience, and economy in tax collection, principles that remain relevant to modern tax administration. Subsequent contributions by public finance scholars expanded the analysis to include the effects of taxation on economic behaviour, institutional performance, and the distribution of fiscal burdens. In the modern literature, tax arrears can be interpreted as the outcome of interactions among the taxpayer's ability to pay, willingness to comply, perceived probability of enforcement, administrative costs, and confidence in public institutions. A particularly influential contribution was made by Allingham and Sandmo (1972), whose economic model of tax evasion explains compliance decisions through the interaction of expected benefits, detection probabilities, and penalties. Although their framework primarily concerns deliberate tax evasion rather than all forms of tax arrears, it provides a useful basis for understanding the deterrent effects of enforcement. However, the accumulation of tax arrears cannot be explained exclusively by the possibility of penalties or inspections. Businesses may experience temporary cash-flow shortages, households may have limited financial resources, and taxpayers may fail to pay because of inadequate information, procedural complexity, or technical difficulties. A comprehensive model must therefore distinguish intentional non-compliance from involuntary payment difficulties and administrative failures. This distinction has important policy implications. Taxpayers who deliberately conceal income or repeatedly disregard legal obligations require targeted enforcement, whereas those experiencing temporary financial difficulties may benefit more from payment plans, early communication, simplified procedures, and timely assistance. Applying identical enforcement measures to both groups can generate unnecessary administrative costs, discourage future compliance, and impose disproportionate burdens on financially vulnerable taxpayers. Modern tax debt management should therefore be based on differentiated interventions that reflect the nature, scale, duration, and recoverability of each liability. The OECD's approach to tax debt management similarly emphasises prevention, appropriate taxpayer engagement, analytical targeting, and proportionate collection measures.

The growth of arrears should not automatically be interpreted as evidence that tax administration has become less effective. Changes in the tax base, the number of registered taxpayers, the structure of economic activity, the recognition of previously unrecorded liabilities, inflation, payment capacity, and the treatment of disputed or uncollectible debt can all affect the reported amount. Accordingly, an accurate assessment requires distinguishing newly arising arrears from previously accumulated debt, analysing collection rates, and measuring the proportion of arrears that is realistically recoverable. The relationship between arrears and the budget deficit also needs to be interpreted cautiously because the two indicators are influenced by different fiscal and macroeconomic factors.

A further consideration is that tax arrears are generated by both macroeconomic and microeconomic conditions. At the macroeconomic level, economic slowdowns, rising production costs, inflationary pressures, limited access to credit, and sectoral imbalances may reduce taxpayers' ability to make payments on time. At the microeconomic level, inadequate financial planning, poor accounting practices, irregular income, and weak cash-flow management can contribute to overdue liabilities. Institutional factors include the complexity of tax procedures, delays in resolving disputes, fragmented information systems, and insufficient coordination among public authorities. Behavioural factors include procrastination, limited awareness of payment deadlines, perceptions of unfairness, and low confidence in the use of public revenue.

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These factors indicate that tax arrears reduction requires an integrated analytical framework rather than reliance on a single enforcement instrument. The first priority should be to establish a reliable classification of taxpayers and outstanding liabilities. Tax arrears can be segmented according to their amount, age, recurrence, tax category, payment history, financial circumstances, and probability of recovery. Such segmentation would allow tax authorities to identify recently overdue payments that can be resolved through reminders, distinguish recurring high-risk cases that require closer monitoring, and separate disputed or potentially uncollectible debts from liabilities that can realistically be recovered.

A practical implementation model could classify taxpayers into low-, medium-, and high-risk categories. Low-risk taxpayers with a history of timely payments could receive automated notifications and simplified payment services. Medium-risk taxpayers could be offered personalised reminders, instalment arrangements where legally available, and information about payment procedures. High-risk cases involving repeated non-compliance, substantial liabilities, or evidence of deliberate avoidance could be referred for enhanced verification and proportionate enforcement. The classification criteria should be periodically reviewed, and taxpayers should have the opportunity to correct inaccurate records or challenge decisions affecting them.

Digital transformation can significantly strengthen this framework. The integration of tax databases with payment systems and other legally accessible administrative information can improve the identification of outstanding liabilities, reduce duplication, and facilitate timely communication. Predictive analytics can also help estimate the probability that a taxpayer will develop arrears, allowing administrative resources to be allocated before liabilities become substantial. Nevertheless, predictive models should support rather than replace administrative judgement. Their reliability depends on the quality, representativeness, and timeliness of the underlying data, and their application should be subject to transparency, data protection, and appropriate review procedures.

One practical direction for Uzbekistan is the development of an automated mechanism connecting information on individuals' property and land tax arrears with electricity billing infrastructure. Under the proposal examined in the dissertation, cases in which an individual's combined property and land tax arrears exceed UZS 1 million would trigger an automated process intended to facilitate payment and reduce outstanding liabilities. The mechanism could connect tax records with a digital notification and payment interface, enabling taxpayers to receive accurate information about their liabilities and settle them through convenient electronic channels.

However, the effectiveness of this proposal depends on the distinction between automated payment facilitation and automatic compulsory withdrawal of funds. Integration with electricity billing systems should not, by itself, create a legal basis for deducting tax arrears from electricity payments or restricting access to an essential utility. Any direct collection procedure would require a clear statutory basis, advance notification, verification of the liability, an accessible dispute mechanism, and protection against disproportionate hardship. The system should also account for duplicate payments, disputed assessments, payment arrangements, and errors in taxpayer identification. Where compulsory recovery is legally authorised, it should follow the applicable procedural safeguards. A carefully designed system of notifications, payment links, and legally compliant collection procedures would improve convenience while reducing the risk of unjustified financial pressure on households.

A second direction concerns the relationship between tax compliance and public trust. Conventional tax administration often focuses on the legal obligation to pay taxes and the consequences of non-compliance. Yet the willingness of individuals to fulfil their obligations may also depend on whether they consider public institutions legitimate, transparent, and accountable. When taxpayers can

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understand how public revenue supports education, healthcare, infrastructure, social protection, and local development, taxation becomes more closely connected with visible public benefits. This does not imply that individual tax payments are directly earmarked for particular expenditures; rather, transparent reporting can demonstrate how public revenues collectively finance government functions.

In this context, Uzbekistan could develop a digital module entitled "Public Expenditure Financed by Individual Tax Payments". The module would provide accessible information about budget revenues and expenditure programmes financed from pooled public resources, using clear visualisations, regional comparisons, and simplified explanations. It could display the distribution of public expenditure across major functions, expenditure execution rates, selected infrastructure projects, and the results achieved through public programmes. To avoid misleading interpretations, the interface should explicitly explain that tax revenues are pooled and that the expenditures shown are not necessarily financed by the individual taxes of a particular citizen.

The module should be connected to reliable public finance data and updated according to a defined reporting schedule. Its credibility would depend on the consistency of the published information, the traceability of expenditure figures to official budget reports, and the clarity with which planned allocations are distinguished from actual expenditure. Such a system could improve fiscal transparency and provide a practical instrument for strengthening the social relationship between taxpayers and public institutions. It should be evaluated through measurable indicators, including usage rates, taxpayer awareness, perceived transparency, and changes in voluntary payment behaviour, rather than assuming that publication alone will necessarily increase trust.

The third direction is the development of a regional Tax Discipline Index. Regional tax compliance is influenced by differences in economic structure, household income, business activity, administrative capacity, and the accessibility of payment services. An aggregate indicator could help identify areas in which arrears are persistent and distinguish them from regions demonstrating stronger payment performance. The index proposed in the dissertation combines total tax arrears with selected indicators of property tax, land tax, turnover tax, and personal income tax revenues.

For analytical consistency, however, these indicators should not be combined solely through their absolute monetary values. Regions differ in population, economic size, taxable capacity, and the number of registered taxpayers. A region with higher tax revenues may simply have a larger economic base, while a region with lower arrears in absolute terms may still have a relatively poor compliance rate. The index should therefore use normalised indicators and clearly defined denominators, such as arrears relative to assessed liabilities, collection rates, the proportion of payments made on time, and revenue performance relative to an estimated tax base.

One possible specification is:

$$TDI_r = w_1 C_r + w_2 P_r + w_3 L_r + w_4 V_r - w_5 A_r,$$

where TDIr represents the Tax Discipline Index for region r; Cr is the timely collection rate; Pr is the normalised property tax collection indicator; Lr is the normalised land tax collection indicator; Vr represents selected turnover and personal income tax compliance indicators; Ar is the normalised tax arrears indicator; and w1,…,w5 are non-negative weights whose sum equals one. All components should be transformed to a comparable scale before aggregation.

The weights could initially be established through expert assessment and subsequently tested using statistical techniques and sensitivity analysis. The index should be assessed for robustness against changes in weighting, data availability, and regional economic structure. Where possible, collection rates

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should be calculated using consistent definitions of assessed liabilities and actual payments. The index should also distinguish improvements caused by genuine compliance gains from those resulting from changes in tax policy, reassessments, write-offs, or the timing of revenue recognition.

A regional performance framework based on this index could support an annual incentive programme for the 100 mahallas with the highest levels of tax discipline. Under the proposal examined in the dissertation, each selected mahalla could receive up to UZS 2 billion from the state budget to support local development priorities. The rationale is to establish a connection between responsible tax behaviour, collective accountability, and tangible improvements in local public services. However, the allocation of funds should be governed by transparent eligibility criteria, verified performance data, and a clear list of permissible expenditures.

To ensure fairness, the assessment should consider not only the absolute amount of revenue collected but also timely payment rates, the reduction of arrears, the completeness of the tax base, and the economic characteristics of each locality. Otherwise, wealthier mahallas could receive disproportionately high scores simply because they have larger taxable resources. A minimum performance threshold, independent verification, and safeguards against manipulation would help preserve the credibility of the programme. The allocation of additional funding should also be evaluated against its fiscal cost and the measurable benefits generated for residents.

Behavioural economics provides another important perspective on tax arrears reduction. Taxpayers do not always make payment decisions through a fully informed calculation of financial costs and benefits. Forgetfulness, procrastination, uncertainty about payment procedures, and the perception that a deadline remains distant can lead to unintentional non-compliance. Simple interventions, including timely text messages, personalised notifications, clear payment instructions, and reminders that explain the consequences of overdue liabilities, may help address these barriers.

Communication should be accurate, respectful, and adapted to the needs of different taxpayer groups. For example, a reminder issued shortly before a payment deadline could state the amount due, the relevant deadline, the available payment channels, and a direct link to the official payment service. A second notification could be sent after the deadline, explaining the steps available to resolve the arrears. Repeated reminders should be limited to avoid excessive messaging, and all communications should provide a means of checking the underlying tax liability. The effectiveness of different messages could be evaluated through controlled trials, subject to appropriate privacy and ethical safeguards.

A related proposal is to classify public information encouraging timely tax payments as social information and facilitate its free placement in mass media. Television, radio, digital platforms, and local information channels could be used to explain the role of taxation in financing public services, clarify payment deadlines, and promote responsible fiscal behaviour. Campaigns should avoid stigmatising individuals who experience genuine financial hardship. Instead, they should combine the social importance of tax compliance with practical guidance on how to verify liabilities, access electronic services, and seek legally available payment arrangements.

The evaluation of such campaigns should extend beyond the number of videos, infographics, or broadcasts produced. More meaningful indicators would include changes in public awareness, the proportion of taxpayers paying before the deadline, the number of overdue liabilities resolved after notifications, and the cost per additional unit of tax revenue collected. Where feasible, pilot campaigns could be compared with similar areas that have not yet received the intervention. This would help distinguish the actual effect of communication from broader economic or administrative changes.

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An additional mechanism for reducing arrears is the introduction of an early-warning system based on the historical payment behaviour of taxpayers. The system could identify recurring delays, sudden increases in liabilities, unusual payment patterns, and changes in the relationship between declared obligations and actual payments. Statistical models, including logistic regression and time-series forecasting, could be used where the available data and research design support their application. More advanced machine-learning techniques may also be considered, but their use should depend on demonstrated predictive performance, interpretability, and cost-effectiveness.

For aggregate forecasting, autoregressive integrated moving average models may help analyse the historical dynamics of tax arrears and develop short-term projections. Nevertheless, ARIMA models primarily capture patterns in time-series data and should not be interpreted as identifying causal relationships. Their forecasts should be compared with suitable benchmark models and evaluated using out-of-sample error measures. For policy analysis, regression models incorporating relevant economic and institutional variables may provide additional insights, provided that the limitations of observational data are acknowledged.

The proposed mechanisms should be integrated into a unified tax debt management framework. Such a framework would combine early-warning analytics, taxpayer segmentation, automated communication, accessible payment services, transparent public expenditure information, local performance incentives, and proportionate enforcement. The operational sequence would begin with the timely identification and verification of liabilities, followed by an assessment of the reason for non-payment, the selection of an appropriate intervention, and the monitoring of the resulting payment behaviour. Enforcement would remain an essential component, particularly for deliberate and repeated non-compliance, but it would be applied within a broader preventive system.

The effectiveness of this framework should be assessed through a balanced set of indicators. These could include the ratio of collectible arrears to total collectible liabilities, the share of arrears recovered during the reporting period, the proportion of new arrears resolved within specified time limits, the rate of voluntary payment, the average age of outstanding debt, and the administrative cost of collection. Indicators of fairness and service quality should also be included, such as the time required to resolve disputes, the frequency of corrected assessments, the accessibility of payment arrangements, and taxpayer satisfaction with digital services.

International experience suggests that digital tools and analytical methods can improve the targeting and efficiency of tax administration, but technology alone does not guarantee better compliance. Effective implementation depends on sound legal rules, reliable data, institutional coordination, adequate staff capabilities, and public confidence. In Uzbekistan, the integration of tax administration with other digital systems should therefore proceed alongside improvements in data governance, cybersecurity, taxpayer support, and accountability. Data should be exchanged only for legitimate and clearly defined purposes, with appropriate restrictions on access and use.

The policy proposals discussed in this article should also be subject to systematic evaluation. Pilot implementation would allow the authorities to estimate administrative costs, identify unintended consequences, and compare alternative interventions before expanding them nationwide. For example, the automated notification mechanism could be tested in selected regions, while the Tax Discipline Index could initially be calculated using historical data to assess its sensitivity to different weights. The public expenditure module could be evaluated through user surveys and usage statistics, while social information campaigns could be assessed through changes in timely payment rates. Such an approach

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would improve the empirical basis of tax administration reform and reduce the risk of scaling up measures whose effects have not been established.

In conclusion, reducing tax arrears in Uzbekistan requires a transition from a predominantly reactive collection model to a comprehensive system that combines prevention, risk assessment, digital integration, behavioural interventions, public transparency, and proportionate enforcement. Tax arrears should be analysed as both a fiscal indicator and a reflection of the wider institutional relationship between taxpayers and the state. The proposed integration of tax notifications with electricity billing infrastructure, the publication of accessible information on public expenditure, the development of a regional Tax Discipline Index, the incentive-based support of high-performing mahallas, and the expansion of social information campaigns offer complementary directions for reform. Their long-term effectiveness will depend on transparent implementation, reliable performance measurement, legal safeguards, and the protection of taxpayers' rights. By combining these principles, Uzbekistan can strengthen voluntary compliance, improve the recoverability of outstanding liabilities, enhance the predictability of budget revenues, and promote a more accountable and efficient tax administration system.

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