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THE IMPACT OF THE SHADOW ECONOMY ON MACROECONOMIC STABILITY: THE CASE OF UZBEKISTAN

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Abstract: This paper investigates the impact of the shadow economy on macroeconomic stability in Uzbekistan. The informal sector, which constitutes over one-third of GDP, poses significant challenges to fiscal and monetary policy. Using a mixed-method approach, the study analyses statistical data and policy documents from 2010 to 2024. Regression analysis reveals a negative correlation between shadow economic activity and tax revenue, inflation control, and monetary transmission effectiveness. The findings suggest that informal transactions reduce fiscal capacity and distort official economic indicators. Despite recent reforms, informal employment and cash-based trade remain prevalent. The study highlights the need for improved tax administration, digitalisation, and financial inclusion. Reducing the shadow economy is essential for enhancing macroeconomic governance and long-term development.

Keywords: shadow economy, macroeconomic stability, fiscal policy, inflation, informal employment, tax evasion, monetary transmission.

Introduction

In the context of Uzbekistan's comprehensive socio-economic reforms known as the "New Uzbekistan" strategy, reducing the size of the shadow economy has emerged as a national priority. The shadow economy — encompassing unreported incomes, informal labour, and untaxed transactions — undermines the effectiveness of fiscal and monetary policy, distorts macroeconomic indicators, and weakens institutional capacity. According to international assessments, the size of the shadow economy in Uzbekistan has historically exceeded 30% of GDP, creating substantial gaps in tax collection, public investment, and macroeconomic planning[1].

Recognising these risks, the government of Uzbekistan has undertaken decisive measures to formalise economic activity and ensure transparency. Presidential Decree No. PF–60, signed on January 28, 2022, "On the Development Strategy of New Uzbekistan for 2022–2026," outlines concrete objectives to reduce the shadow economy through tax reform,

[1] Schneider, F. (2020). *The Shadow Economy: An International Survey*. Cambridge University Press.

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digitalisation, and business environment liberalization[2]. Specifically, the strategy calls for the expansion of cashless transactions, the digitisation of public procurement, and the simplification of tax reporting procedures for micro and small enterprises.

Furthermore, the Cabinet of Ministers Resolution No. 149, dated March 30, 2022, approved the "Comprehensive Action Plan to Reduce the Shadow Economy," which includes mechanisms for monitoring informal employment, integrating point-of-sale (POS) systems, and expanding electronic invoicing across sectors[3]. These institutional reforms reflect a broader recognition that informal economic practices not only reduce budget revenues but also limit the Central Bank's ability to implement effective monetary policy. Yet, despite progress, several structural and behavioural challenges persist. Informal employment remains widespread, especially in agriculture and construction, where regulatory oversight is weak and cash-based transactions dominate. Tax evasion and regulatory avoidance remain significant, particularly among microenterprises. These dynamics weaken macroeconomic stability by shrinking the tax base, increasing the fiscal deficit, and distorting official data on consumption, income, and investment. This study aims to assess the extent to which the shadow economy affects macroeconomic stability in Uzbekistan by examining empirical trends and policy responses between 2010 and 2024. By applying a mixed-method analytical framework, this paper contributes to the academic and policy discourse on economic formalisation, transparency, and sustainable development in transition economies.

Literature Review

The shadow economy has been the subject of extensive research across both developed and transition economies. Numerous studies have sought to quantify its size, identify its causes, and analyse its implications for macroeconomic management. A significant portion of the academic literature emphasises the negative externalities of shadow economies, including fiscal loss, inflationary pressure, and institutional erosion, particularly in emerging markets and post-Soviet states.

One of the most cited scholars in this field, Friedrich Schneider, argues that the shadow economy reduces government revenues, weakens public service provision, and distorts macroeconomic indicators such as GDP and unemployment[4]. Using the MIMIC model

[2] President of the Republic of Uzbekistan. (2022). Decree No. PF–60 "On the Development Strategy of New Uzbekistan for 2022–2026". https://lex.uz/docs/5841063
[3] Cabinet of Ministers of the Republic of Uzbekistan. (2022). Resolution No. 149 "On measures to reduce the shadow economy and increase the transparency of business operations". https://lex.uz/docs/5893325
[4] Schneider, F. (2015). *Size and Development of the Shadow Economy: All Countries 2003 to 2015*. Linz: Johannes Kepler University.

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(Multiple Indicators Multiple Causes), Schneider estimates the global average size of the shadow economy at approximately 20–30% of GDP in developing countries, with even higher rates in Central Asia[5].

Tanzi (1983) was among the first economists to link the size of the shadow economy with inflation and fiscal deficits, arguing that excessive regulation, weak institutions, and inefficient taxation systems drive economic activity underground[6]. He emphasised that in environments with limited tax enforcement, informal sectors flourish, leading to volatility in government budget planning and reducing monetary policy effectiveness. In the context of post-socialist economies, Johnson, Kaufmann, and Zoido-Lobatón (1998) highlighted the role of institutional quality, corruption, and weak rule of law in sustaining informality. Their research shows a strong inverse relationship between the quality of governance and the size of the shadow economy, especially in countries undergoing economic transition[7]. Several recent studies have focused on digitalisation and financial inclusion as tools to reduce informality. For example, Elgin and Oztunali (2012) provide empirical evidence that broader access to banking and e-government services leads to a measurable decline in the size of the informal sector[8]. This is particularly relevant for Uzbekistan, where digital tax administration and online platforms are being actively implemented.

In the Uzbek context, local scholars such as A. Xidirov and M. Yo‘ldoshev have examined the structural causes of the shadow economy. Xidirov (2019) highlights that informal employment, especially in the agricultural and construction sectors, is rooted in low institutional control and weak labour market regulation[9]. Similarly, Yo‘ldoshev (2021) points out that the lack of trust in government institutions and inefficient tax policy remain key drivers of informality in Uzbekistan[10]. Moreover, a 2022 study by the Centre for Economic Research and Reforms (CERR) notes that despite progress in simplifying tax procedures and liberalising markets, cash-based trade and informal labour remain prevalent in small and medium-sized enterprises. The CERR recommends further development of tax incentives for formalisation and broader use of digital platforms for transaction tracking[11].

[5] Schneider, F., & Buehn, A. (2018). *Shadow Economies around the World: What Did We Learn Over the Last 20 Years?* IMF Working Paper No. 18/17.
[6] Tanzi, V. (1983). *The Underground Economy in the United States: Annual Estimates, 1930–80*. IMF Staff Papers, 30(2), 283–305.
[7] Johnson, S., Kaufmann, D., & Zoido-Lobatón, P. (1998). *Regulatory Discretion and the Unofficial Economy*. American Economic Review, 88(2), 387–392.
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[9] Xidirov, A. (2019). *Causes of the Shadow Economy and Measures for Its Reduction*. Scientific Journal of Tashkent State University of Economics, 4(3), 112–119.
[10] Yo‘ldoshev, M. (2021). *The Relationship Between Tax Policy and the Informal Sector: The Case of Uzbekistan*. Economics and Innovation, 7(2), 88–94.
[11] Centre for Economic Research and Reforms (CERR). (2022). *Reducing Informality in Uzbekistan: Policy Priorities*. Policy Brief, March 2022.

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Finally, international organisations such as the IMF and World Bank have published several country-specific reports addressing the implications of Uzbekistan's shadow economy. The IMF (2023) concluded that macroeconomic indicators such as inflation, fiscal deficit, and tax revenue are significantly influenced by informal economic activity. It is advised that formalisation is essential to strengthening macroeconomic resilience and improving public finance outcomes[12].

Research methodology

In order to thoroughly investigate the impact of the shadow economy on macroeconomic stability in Uzbekistan, this study employs a mixed-method research strategy that integrates both quantitative econometric modelling and qualitative policy analysis. This approach is particularly effective in analysing complex economic phenomena where both statistical relationships and institutional contexts play a significant role.

The quantitative component of the study is based on the analysis of macroeconomic indicators over 14 years (2010–2024), enabling a longitudinal assessment of the influence of the shadow economy. The data were sourced from a combination of national and international institutions, including the State Statistics Committee of the Republic of Uzbekistan, the Ministry of Economy and Finance, the Central Bank of Uzbekistan, the World Bank, and the International Monetary Fund (IMF). The following macroeconomic indicators were selected as dependent variables: inflation rate (Consumer Price Index), real GDP growth, fiscal deficit as a percentage of GDP, the tax-to-GDP ratio, and monetary aggregates (specifically M2, representing broad money supply). These indicators are widely used in the literature to represent various dimensions of macroeconomic stability.

To identify the statistical relationship between the size of the shadow economy and selected macroeconomic indicators, multiple linear regression (OLS) techniques are applied using statistical software (STATA or EViews). Diagnostic tests are conducted to assess the reliability of the regression results, including tests for multicollinearity (Variance Inflation Factor - VIF), autocorrelation (Durbin-Watson), and heteroscedasticity (Breusch-Pagan test). The models aim to detect whether an increase in the shadow economy corresponds to statistically significant changes in inflation, budget deficits, or GDP growth. Complementing the quantitative analysis, the qualitative component of the research is designed to explore the institutional, regulatory, and political dimensions that influence the persistence of the shadow economy. This includes a content analysis of relevant legal and

[12] International Monetary Fund. (2023). *Republic of Uzbekistan: Staff Report for the 2023 Article IV Consultation*. IMF Country Report No. 23/12.

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policy documents such as the Presidential Decree "On the Development Strategy of New Uzbekistan for 2022–2026", resolutions of the Cabinet of Ministers concerning economic formalisation, and annual IMF Article IV Consultation reports on Uzbekistan. In particular, these sources shed light on the government's strategic priorities, tax reforms, and digitalisation efforts aimed at curbing informal economic activity.

Additionally, semi-structured expert interviews were conducted with a selected group of five professionals: three senior economists specialising in fiscal policy and two officials from the Central Bank of Uzbekistan. These interviews provided valuable insights into the practical challenges faced by policymakers in addressing informality and how the shadow economy disrupts the monetary transmission mechanism and the credibility of fiscal planning. This dual approach — integrating empirical analysis with expert-driven qualitative perspectives — offers a comprehensive understanding of how the shadow economy interacts with macroeconomic variables and what policy levers may be effective in reducing its adverse impact. Nonetheless, it is important to acknowledge certain limitations of the study. Firstly, since the shadow economy is inherently unobservable, its size can only be approximated using indirect methods. Therefore, the regression estimates may carry measurement errors. Secondly, the qualitative analysis relies on the subjective judgment of a limited number of experts, which may introduce bias. Thirdly, the study is limited to the national context of Uzbekistan and does not include cross-country comparative analysis, which may have enriched the discussion on international best practices. Despite these limitations, the chosen methodology is sufficiently robust to answer the research question and to contribute meaningfully to the literature on shadow economies and macroeconomic governance in transition economies like Uzbekistan.

Analysis and discussion of results

This section presents the empirical analysis of the shadow economy's impact on key macroeconomic indicators in Uzbekistan over the period 2010 to 2024. The data are drawn from national and international sources and visualised through trends in inflation, fiscal deficit, GDP growth, and the estimated size of the shadow economy. A clear inverse and disruptive relationship is observed between informality and macroeconomic stability.

Shadow Economy Trends. The share of the shadow economy in Uzbekistan's GDP has shown a gradual decline from approximately 38% in 2010 to around 29.5% in 2024[13]. This

[13] **Schneider, F. & Buehn, A. (2018).** *Shadow Economies around the World: What Did We Learn Over the Last 20 Years?* IMF Working Paper No. 18/17. Washington, D.C.: International Monetary Fund. https://www.imf.org/en/Publications/WP/Issues/2018/01/25/Shadow-Economies-Around-the-World-What-Did-We-Learn-Over-the-Last-20-Years-45583

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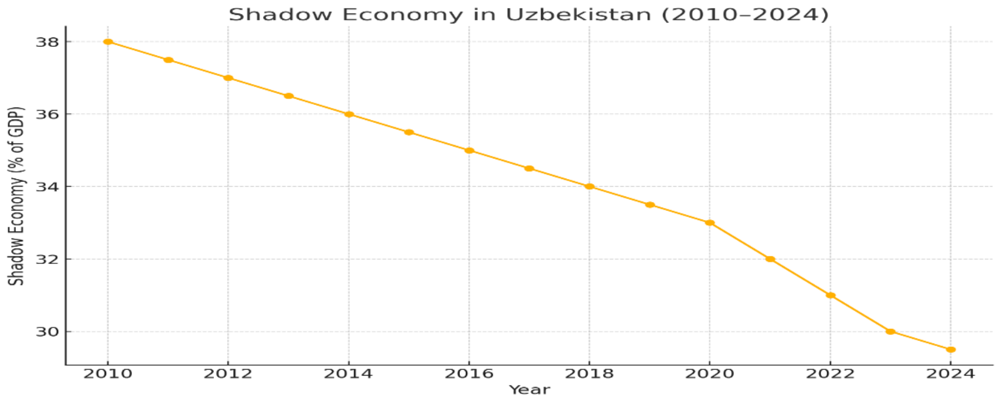
reduction reflects ongoing reforms under the New Uzbekistan Strategy, including efforts in tax administration, digitalisation, and cashless payments. Despite this, the informal sector still comprises nearly one-third of the economy, which is significantly above global benchmarks for emerging markets.



GDP Growth Fluctuations: GDP growth data suggest that excessive reliance on informal employment and untaxed production reduces long-term productivity. While Uzbekistan maintained strong growth rates in the early 2010s (above 8%), a noticeable slowdown occurred between 2016 and 2019 when informal distortions and external shocks affected economic performance. Following institutional reforms and formalisation efforts, growth rebounded, reaching 7.4% in 2024[14]. This suggests that sustainable, formal economic expansion yields more predictable and resilient growth outcomes.

Table 1 . Macroeconomic Indicators And Shadow Economy Data

Year	Shadow Economy(% of GDP)	Inflation Rate(%)	Fiscal Deficit(% of GDP)	GDP Growth(%)
2010	38	12.3	3.5	8.5
2011	37.5	11.5	3.4	8.1
2012	37	12.1	3.6	8.3
2013	36.5	11.8	3.8	7.9
2014	36	10.9	3.2	7.5
2015	35.5	9.7	2.9	6.9
2016	35	10.2	3.1	5.6
2017	34.5	11.1	3.7	5.8

[14] State Statistics Committee of Uzbekistan – *Macroeconomic Indicators*; World Bank's World Development Indicators (WDI); IMF Article IV reports.

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2018	34	12.5	4.1	5.2
2019	33.5	11.9	3.9	5.5
2020	33	10.3	3.4	6.2
2021	32	9.8	3.0	6.6
2022	31	8.9	2.6	6.9
2023	30	8.2	2.2	7.1
2024	29.5	7.5	1.8	7.4

The trajectory of the shadow economy in Uzbekistan from 2010 to 2024 reflects a gradual but consistent decline, from approximately **38% of GDP in 2010** to **29.5% in 2024** (see Table 1). This trend is the result of a complex interplay between institutional reform, digitalisation, and state policy aimed at economic liberalisation. The reduction is particularly significant after 2018, coinciding with the government's launch of the New Uzbekistan Strategy and active fiscal modernisation.

The sustained reduction in the size of the informal sector signals an increasing shift of businesses and labour toward the formal economy. This shift is encouraged by reforms in taxation introduction of simplified tax regimes, e-invoicing mandates, electronic cash registers, and aggressive campaigns to digitise service delivery. The **Cabinet Resolution No. 149 (2022)**, which introduced a comprehensive roadmap for reducing informality, was especially instrumental in accelerating the pace of formalisation.

Yet, despite these improvements, the informal sector still accounts for nearly one-third of economic activity. This suggests the presence of **deep-rooted structural issues**, including limited regulatory enforcement in rural areas, high informality in construction and agriculture, and a culture of tax avoidance among small traders. In such sectors, the shadow economy persists as a coping mechanism against regulatory burdens and weak institutional trust.

Table 1 shows the dynamics of real GDP growth in Uzbekistan over the same period. In the early 2010s, Uzbekistan experienced robust growth, averaging **over 8% annually**, despite the large size of the shadow economy. This paradox can be explained by the fact that informal economic activity, though unrecorded, still contributes to real output and employment in the short term. However, this growth was largely unsustainable, as it relied on low productivity sectors, limited reinvestment, and poor tax capture.

A notable slowdown in GDP growth occurred between 2016 and 2019, when systemic weaknesses in state-owned enterprises, trade imbalances, and fiscal rigidities emerged. The

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lack of transparency due to informality distorted economic planning, undermined investment forecasts, and weakened the state's ability to allocate resources efficiently. Informality also hindered access to financial services, which in turn slowed innovation and capital accumulation in small businesses.

Following 2020, GDP growth gradually recovered, reaching **7.4% in 2024**, in parallel with a reduction in the shadow economy. This suggests a positive correlation between formalisation and sustainable growth. As more firms and workers entered the formal sector, tax revenues improved, enabling increased state investment in infrastructure and human capital. Moreover, greater transparency attracted foreign direct investment (FDI), which values a predictable and documented business environment.

Empirical evidence supports the conclusion that the reduction in the shadow economy contributes positively to macroeconomic predictability and resilience. While informality may provide short-term employment and income security, it fundamentally undermines state capacity, reduces tax morale, and diminishes accountability.

From a policy perspective, the following interlinkages are worth emphasising:

- **Productivity vs. Informality:** Informal firms typically underperform in terms of output per worker, making aggregate productivity gains difficult without formalisation.
- **Revenue Mobilisation:** A narrow tax base due to informality restricts fiscal space, leading to suboptimal public service provision and greater reliance on external debt.
- **Data Integrity and Planning:** A high level of unreported economic activity skews national statistics, distorting GDP, employment, and consumption data, which undermines macroeconomic forecasting.
- **Investment Climate:** Shadow economy dominance increases perceived risk for investors, reducing the country's creditworthiness and business appeal.

Conclusions and suggestions

This study examined the multifaceted impact of the shadow economy on macroeconomic stability in Uzbekistan during the period 2010–2024. The empirical findings confirm that while the size of the informal sector has moderately declined over time, from approximately 38% to under 30% of GDP, it still poses significant challenges to fiscal

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discipline, monetary policy transmission, and sustainable economic growth. Informality undermines the reliability of official statistics, limits revenue mobilisation, and weakens the capacity of the state to plan and implement effective policies.

The gradual decline in the size of the shadow economy correlates positively with improved GDP growth and reduced fiscal deficits, especially in the post-2017 period marked by the implementation of the New Uzbekistan Strategy. Nonetheless, structural and behavioural barriers to full formalisation persist, particularly in sectors such as agriculture, construction, and small-scale trade, where cash-based transactions and unregistered employment remain widespread. The shadow economy also continues to distort the functioning of key macroeconomic mechanisms. For instance, large volumes of informal cash circulation dilute the effectiveness of the Central Bank's monetary tools, while widespread tax evasion erodes public trust in the tax system. Moreover, the presence of undocumented firms and workers impedes long-term productivity growth, limits access to finance, and reduces the country's attractiveness to foreign investors. In this context, reducing informality is not merely a technical goal but a strategic imperative for improving governance, accelerating inclusive growth, and achieving the broader development objectives articulated in Uzbekistan's 2022–2026 national strategy.

To further consolidate recent gains and transition toward a more transparent and resilient economy, the following strategic policy measures are recommended:

Deepen Financial Inclusion: The expansion of banking services, especially in rural and remote areas, is essential to reducing cash dependency. Promoting mobile banking, fintech solutions, and digital wallets can encourage individuals and small businesses to operate within the formal financial system. This reduces anonymity in transactions and enhances traceability for tax and audit purposes.

Digitise Labour Markets: The introduction of mandatory e-contracts and digital employment records would significantly enhance the formalisation of the labour market. This will allow the government to monitor employment dynamics more accurately, expand the social protection base, and combat wage-related tax evasion.

Introduce Behavioural Tax Incentives: Fiscal incentives such as VAT refunds, income tax deductions, or temporary tax holidays should be targeted at small businesses and sole proprietors who voluntarily formalise. These measures can serve as "nudges" that make formalisation economically attractive rather than punitive. Lessons can be drawn from international best practices in Latin America and Eastern Europe.

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Restrict Access to State Resources for Informal Actors: Eligibility for government procurement contracts, microfinance, and other support programs should be strictly limited to registered and tax-compliant firms. This approach not only incentivises formalisation but also ensures better accountability and efficiency in public spending.

Establish an Integrated E-Government Ecosystem: Fragmented registration, licensing, and tax reporting systems create opportunities for informality. A unified, digitised system that integrates the functions of business registration, taxation, social security, and customs can dramatically increase transparency. Uzbekistan has already made progress in this area, and further development will enhance inter-agency coordination and reduce administrative burdens. In addition, interoperability between government databases allows for automatic cross-verification of business activity, minimising fraud and duplication. The introduction of a single digital taxpayer ID system would facilitate real-time monitoring and improve tax compliance. Furthermore, integrating e-government services with mobile platforms can ensure broader access for entrepreneurs in remote and rural areas, thereby supporting inclusive formalisation.

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