INTERNATIONAL MONETARY FUND

Uzbekistan: Transition to Inflation Targeting

Moayad Al Rasasi and Ezequiel Cabezon

WP/22/229

2022
NOV

 WP/22/229

IMF Working Paper
Middle East and Central Asia Department

Uzbekistan's Transition to Inflation Targeting

Prepared by Moayad Al Rasasi and Ezequiel Cabezon

Authorized for distribution by Ron van Rooden
November 2022

ABSTRACT: Uzbekistan has significantly improved its monetary policy framework during 2017-21. Nevertheless, the transition to inflation targeting is challenging as the country is going through a period of deep structural reforms. Therefore, the Central Bank of Uzbekistan (CBU) will have to monitor structural reforms and calibrate monetary policy accordingly. This paper identifies institutional and structural gaps, and assesses the effectiveness of monetary policy transmission. Institutional gaps are assessed using institutional indexes while transmission is assessed using VARs. It concludes that in the coming years, reforms will need to continue, to further improve the CBU's governance and independence, develop financial markets, but most of all to reduce the still large footprint of the state in the financial sector as well as in the overall economy.

RECOMMENDED CITATION: Moayad Al Rasasi & Ezequiel Cabezon, 2022. " Uzbekistan's Transition to Inflation Targeting," IMF Working Papers 2022/229, International Monetary Fund.

JEL Classification Numbers:	E31, E40, E52, E58
Keywords:	Uzbekistan; Inflation targeting; Monetary policy
Author's E-Mail Address:	ecabezon@imf.org; malrasasi@imf.org

* "The author(s) would like to thank" footnote, as applicable.

WORKING PAPERS

Uzbekistan's Transition to Inflation Targeting

Prepared by Moayad Al Rasasi and Ezequiel Cabezon[1]

[1] "We would like to extend our sincere appreciation to Ron van Rooden for his guidance, support and encouragement to pursue this project. We also would like to thank Christen Richmond for the discussion on the early draft of the paper and the staff of the Central Bank of Uzbekistan in particular to Nodir Achilov, Behzod Hamraev, and Bobir Abubakirov. We also acknowledge very useful discussion with Kevin Ross, Galina Kostina, Lawrence Dwight, Subir Lall, Darryl Kind, Marco Casiraghi, Stephen Mulena, Kelly Ecklhold, Altynai Aidarova, Manmohan Singh, Francesco Grigoli, and participants at the MCD Discussion.

Contents

The transition in 2017-21

Background

1. **Uzbekistan has been working to improve its institutional and policy framework to be able to fully implement inflation targeting by 2023.** Prior to 2017, monetary policy was subordinated to an exchange rate peg. In September 2017, the Central Bank of Uzbekistan (CBU) adopted a new approach, and monetary policy was focused on achieving price stability. Importantly, the CBU was removed from the list of state bodies that are under the control of the government, paving the way for greater operational independence for the CBU. Also, restrictions on access to foreign exchange were abolished, resulting in a 50 percent depreciation of the official exchange rate and unifying the exchange rate. The IMF provided considerable technical assistance to support the CBU[1]. A new central bank law was enacted in October 2019, setting price stability explicitly as the primary goal of monetary policy and the CBU started transitioning to an inflation targeting (IT) regime. This paper assesses the CBU's progress in transitioning to IT and aims to identify remaining institutional and structural gaps, including through an assessment of the effectiveness of the monetary policy transmission mechanism.

2. **The transition to inflation targeting is challenging as Uzbekistan is still undergoing deep structural reforms.** Since 2017, the authorities have embarked on an ambitious reform agenda that included liberalizing foreign trade, prices, and the exchange market, reforming government operations and the tax system[2], and creating reliable statistics. During the transition from a planning to a market economy, in addition to traditional demand-pull and cost-push inflationary pressures, other structural factors also affected inflation (Sløk, 2000). For instance, price liberalization and the relative price adjustments that follow feed inflation. Similarly, rigidities in goods and labor markets and the indexation of prices have tended to contribute to higher inflation in transition economies. Finally, prices grow with incomes (the so-called Balassa-Samuelson effect). Accordingly, the monetary authorities have to estimate the contribution of these drivers of inflation, although this is complicated by the lack of predictable relationships between economic variables due to the structural changes. As a result, implementing IT in a transition economy can be particularly challenging.

3. **The Uzbek authorities are working to develop market institutions, foster competition, and reduce the still large footprint of the government on the economy.** Limited competition, a lack of market culture, and a large footprint of government are also observed in financial markets, including the foreign exchange market, the interbank market, and the banking system. International experience suggests that it is key to advance financial sector reforms in order to be able to be successful in implementing IT.

IT Framework: General Considerations

4. **Inflation Targeting (IT) has become a popular operational framework for central banks to achieve price stability.** Contrasting to other monetary frameworks, seeking to maintain low and stable inflation indirectly by targeting intermediate variables such as monetary aggregates or the exchange rate, IT entails targeting inflation directly and explicitly. IT has been adopted by 41 countries – including three in the Caucasus and Central Asia[3] (IMF, 2020). In these countries, which include advanced and emerging markets, IT has fostered better macroeconomic conditions compared to countries with other monetary frameworks (IMF 2006, Roger 2009).

5. **The general preconditions for inflation targeting include: institutional independence, stable macroeconomic fundamentals, well-developed analytical capabilities, and a healthy financial system.**

[1] November 2017, February 2018, February 2019, September 2020, and December 2021.

[2] In 2019, major tax reforms were introduced to promote private sector growth.

[3] These countries are Armenia, Georgia, and Kazakhstan. However, Azerbaijan, Kyrgyz Republic and Uzbekistan are transitioning to IT.

Laurens et al. (2015) emphasize the importance of meeting the required preconditions to be able to adopt a full-fledged IT regime to avoid unfavorable outcomes. Some studies have highlighted additional preconditions for successful IT implementation. For example, Roger and Stone (2005), Walsh (2009), and Freedman and Otker-Robe (2009 and 2010) emphasized that establishing an effective and a clear monetary policy instrument is essential for the success of IT. Batini and Laxton (2005) stressed the need for a clear understanding of the transmission mechanism and building economic databases. A survey study by the IMF (2006) indicated the importance of reducing the level of dollarization in the financial sector to strengthen the effectiveness of monetary policy transmission during the transition toward IT.

6. **There are five main elements for an inflation targeting framework as documented by Hammond (2012).** These essential elements are: (i) setting price stability explicitly as the primary objective of monetary policy; (ii) the public announcement of numerical inflation targets; (iii) an informative monetary policy strategy for setting policy instruments based on a broad set of information, including inflation forecasts; (iv) a transparent monetary policy strategy that communicates monetary policy plans, objectives, and the rationale of decisions to the public; and (v) enhanced accountability in the conduct and evaluation of monetary policy actions. IMF (2015) also highlights the importance of these elements that characterize an effective policy framework for an independent monetary policy.

Improvements in Uzbekistan's Monetary Policy Framework 2017-21

7. **In December 2019, the CBU announced that inflation targeting would be implemented by 2023.** While the transition to IT started already in 2017-18, in January 2020 the CBU adopted a formal IT strategy[4], guiding the transition to IT and with as objectives reducing the inflation rate to 10 percent by the end of 2021 and further to 5 percent by the end of 2023. The strategy also calls for: (i) the close coordination between the CBU and the Cabinet of Ministers, to remove obstacles to the effective transition to IT; (ii) a plan for adjusting remaining administered prices to (at least) cost recovery levels[5]; (iii) reducing the provision of credit on preferential terms, and (iv) keeping the overall fiscal deficit to below 1.5 percent of GDP. Progress in implementing this strategy has been uneven. While the CBU has been successfully implementing the strategy in areas within its control, progress in some areas that require government action — such as credit policy or utility tariffs —is still pending.

8. **The institutional framework for monetary policy was strengthened with the adoption of the new central bank law in 2019.** The new law clearly sets price stability as the overriding objective, grants the CBU operational independence, and makes the CBU accountable for fulfilling its objectives (also including ensuring stability of the banking and payment systems). The law also prohibits the CBU from financing the government. To strengthen the CBU's decision-making process and to ensure proper oversight, the law also required two independent, non-executive members to be appointed to the executive board[6]. To further enhance its accountability framework, the CBU law requires a three-member audit committee and CBU financial statements to be externally audited —as it has been the practice.

9. **As an important element of the transition to IT, the process for monetary policy formulation was strengthened significantly.** The decision-making process was formalized in seven stages (Box 1). The staff of the monetary policy department start the process by generating an initial forecast based on the latest economic developments, as well as alternative scenarios, which are then discussed by relevant departments and the deputy governors. This may lead to revisions, after which the monetary policy department prepares a policy rate proposal (whether to change the policy rate or not). Next, the (revised) forecasts and the proposed policy action

[4] Presidential Decree 5877, November 19, 2019.

[5] By February 2020.

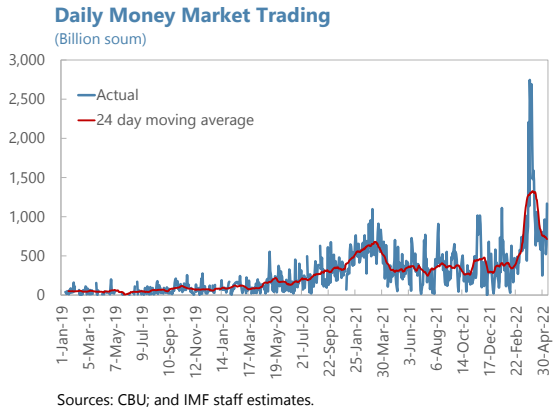
[6] The CBU board has 9 members which include the governor, the 1st deputy governor, 5 deputy governors, and 2 independent members.

are discussed within the credit committee —consisting of key staff[7]—, before consideration by the CBU board. In the board meeting, the staff present the latest economic developments, the medium-term forecast, and the proposed monetary policy action for discussion and approval. The CBU executive board holds eight regular meetings a year in which it discusses monetary policy. Following the board meeting, the decision is communicated to the public via a press conference and the issuance of a press statement.

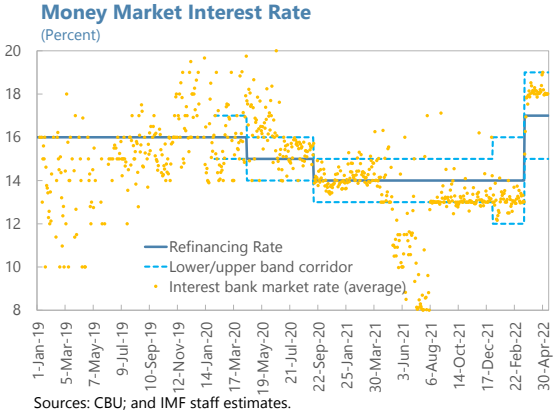
Box 1. The Monetary Policy Decision-making Process

1st Stage	2nd Stage	3rd Stage	4th Stage	5th Stage	6th Stage	7th Stage
Preliminary Forecast	**Discussion of forecasts**	**Improvement of forecasts**	**Proposed Monetary Policy Action**	**Credit Committee**	**Board Meeting**	**Communication**
Development of preliminary forecasts based on current macroeconomic environment and expected changes	Discussion of preliminary forecasts, model output, and risks	Preparation of baseline and alternative scenarios based on interdepartmental discussions	Quarterly forecast consistency check, assessment of monetary environment, economic impact, and proposals	Review of analysis and forecasts by Credit Committee and preparation of proposals for Board Meeting.	Presentation of macroeconomic analysis and forecasts to Board and approval of decision on policy rate	Dissemination of CBU Board decision to the public
5-6 weeks before board meeting	3-4 weeks	2 weeks	1 week	2-4 days	Board Meeting	After Board Meeting

10. **The CBU's monetary policy operations have also been improved**. After 2017, with an active monetary policy replacing the previous peg, banks' reserves became the CBU's operating target, later replaced by the policy rate and interbank rate. More recently, the CBU has also started producing its liquidity forecasts—despite shortcomings in data availability and timeliness—and reformed its standing facilities by consolidating the lending facilities and introducing an overnight deposit facility, in line with IMF technical assistance recommendations[8]. In early 2020, the CBU introduced a new framework for open market operations (OMO), which since then has been used for liquidity provision (FX swaps and Repo auctions) and liquidity absorption (deposits and CBU securities auctions). With these changes, and along with an increase in interbank market transactions, the CBU has been able to keep the interbank rate within the policy rate corridor, as determined by the CBU's overnight facilities.



Sources: CBU; and IMF staff estimates.



Sources: CBU; and IMF staff estimates.

[7] This includes the governor, first deputy governor, deputy governors covering monetary policy, as well as heads of departments.
[8] IMF Technical Assistance (February 2019).

11. **Meanwhile, the CBU has been developing its forecasting and modeling capacity, despite the remaining limitations in economic statistics.** The CBU has made considerable efforts to improve its analytical capacity and macroeconomic forecasting models. It has developed a suite of short-term forecasting models for inflation and other macroeconomic indicators (Box 1). To advance its analytical capacity, an FPAS[9] model was adopted by the CBU not only to forecast key macroeconomic indicators, but also to simulate policy scenarios. However, the large structural break in 2017 and the limitations in the coverage of activity and unemployment indicators[10] make modelling more difficult. In addition, the CBU has been conducting an inflation expectations survey on a monthly basis, which is a useful tool for policymakers to help manage and anchor inflation expectations. Overall, there has been substantial progress in building analytical and forecasting capacity. In the period ahead, the CBU aims to further improve the accuracy of the existing models.

Box 2. CBU Short-term Forecasting Models

As no model can serve all objectives in addition to the natural limitations of various models, the CBU has developed several empirical models for short-term forecasts. These models are displayed in the table below.

Model	Frequency	Forecasted variables	Exogenous variables
ARIMA	Monthly	Core inflation, inflation	
BVAR (Bayesian VAR model)	Monthly	Inflation, credit	
FAVAR (Factor Aug. VAR model)	Monthly	Inflation	Foreign inflation, Exchange rate, CPI components
VECM (Vector Error Correction Model)	Monthly	M0, remittance, FX, interest rate, CPI, GDP	M0, remittance, exchange rate, interest rate, CPI, GDP
DFM (Dynamic Factor Model)	Monthly	GDP	Oil price, industrial production, export, remittances
ARDL (Autoregressive Distributed Lag)	Quarterly	Core inflation	Output gap, PPI, International food prices, FX, Money supply
DOLS (Dynamic OLS Model)	Quarterly	Core inflation	Output gap, PPI, International food prices, FX, Money supply
ARIMA*	Daily	Cash in circulation	

* This model (developed with support from the EBRD) forecasts daily impact of autonomous factors on liquidity
Source: CBU Monetary Policy Guideline 2021-23.

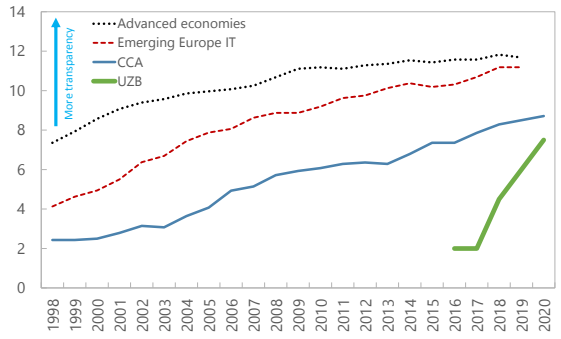
12. **The CBU has significantly stepped up its communication in recent years.** The CBU has become more transparent regarding its monetary policy goals and actions, to increase its credibility and help to better anchor inflation expectations. As a first step, the CBU publishes each year its Monetary Policy Guidelines, which describe the policy objectives and principles for the next 3 years and provide detailed forecasts and scenarios. In addition, as noted above, following each board meeting the CBU holds a press conference and issues a press release. This press release has increased in length, explaining developments and the rationale for any decisions taken. Since 2018, the CBU has been publishing a quarterly review of monetary policy that provides a comprehensive analysis of economic and financial developments, details of monetary policy, as well as an update to the economic outlook. Furthermore, since 2018 the CBU has started to publish on monthly basis monetary and

[9] Forecasting and Policy Analysis System.

[10] Statistics limitations includes the lack of detailed unemployment statistics and limitations on national accounts —as early 2022 this included limited discrete on quarterly data (only available for 2020Q1-2021Q3) and gaps regarding import deflators.

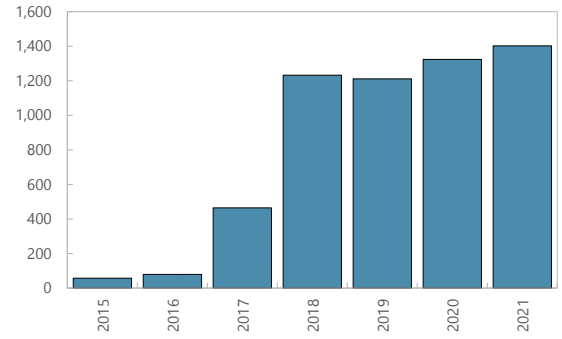
financial statistics[11], as well as a quarterly statistical bulletin including a broader set of statistics. To reach a broad audience, the CBU also uses social media, including a Telegram account[12] which has become an important communication tool. The CBU also maintains frequent contact with market participants. Strengthening communication remains a continuous process to help further build and maintain the CBU's credibility.

Central Bank Transparency
(Index 0-15; 0=minimum and 15=maximum)



Sources: Dincer and Eichengreen (2020); and IMF staff estimates.

CBU-Policy Rate Decisions Press Releases: Length of Text
(# of words)

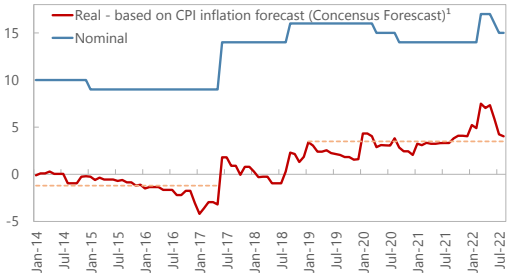


Sources: IMF staff estimates.

13. **The institutional framework was further enhanced with the adoption of several other new laws and instructions.** Laws on foreign exchange, payment system, and banking were also approved in late 2019. Furthermore, the government issued instructions to consolidate the preferential lending programs to within 3 out of the 13 state-owned banks, while preferential loans could no longer be issued at interest rates lower than the CBU policy rate. Additionally, the authorities developed a strategy[13] to reform the banking sector and restructure the state-owned banks. State-owned banks' corporate governance is steadily improving with the appointment of independent supervisory board members with international banking experience, to replace government officials.

14. **CBU policy actions have become more consistent with the plan to phase-in inflation targeting.** In Uzbekistan, the monetary stance can be assessed by the real monetary policy rate (nominal rate deflated by expected inflation). This rate was mostly negative until mid-2017 —when the CBU increased the nominal policy rate as an initial step towards a new regime. Since then the real monetary policy rate has been positive most of the time and since 2019 it has fluctuated around 2-3 percent. This points to a more aggressive approach to monetary policy.

Monetary Policy Rate
(Percent)



1/ Real rate calculated as the nominal rate minus the average of the inflation forecast for the current and following year published by Consensus Forecast.
Sources: CBU; and IMF staff estimates.

Monetary Policy Outcomes in Uzbekistan

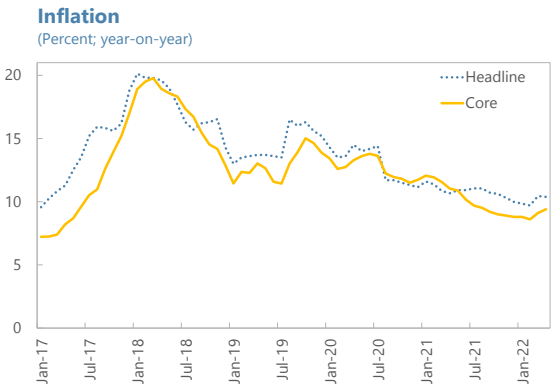
15. **Inflation has been gradually declining in recent years and the CBU has been able to influence inflation expectations.** After a 50 percent depreciation in September 2017, leading to a temporary surge in inflation, inflation has been in a downward trend as a result of a consistent tight monetary policy stance. However, inflation is still relatively high and shows inertia due to the steady depreciation of the exchange rate, further price deregulation and increases in administered prices, and more recently reflecting global trends, including supply chain challenges and commodity price increases. Relatedly, households' and firms' inflation expectations remain above headline inflation. The latter can be attributed to: (i) the CBU's still relatively short track record and (ii) the

[11] Which meet IMF standards and have been published in IMF IFS in February 2020.

[12] https://t.me/s/centralbankuzbekistan

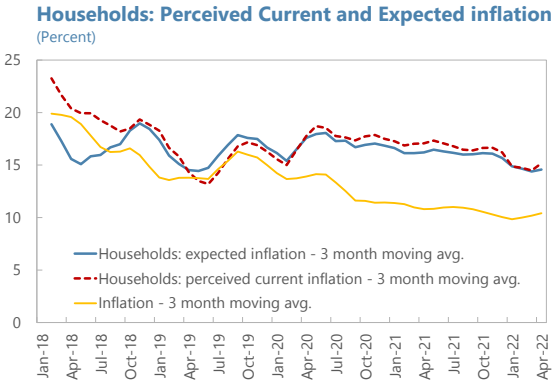
[13] Presidential Decree 5992, May 12, 2020.

households' and firms' general expectation bias. As households and firms perceive the current rate of inflation to be higher than the actual rate of inflation, then the expected rate of inflation is also higher than the actual rate of inflation[14] (Figure 1-central panels). Nevertheless, the CBU appears to have been making progress in influencing inflation expectations. The number of households and firms expecting inflation within 9-12 percent —which is close to the CBU's 10 percent target for 2021— has been steadily increasing (Figure 1-bottom panels).

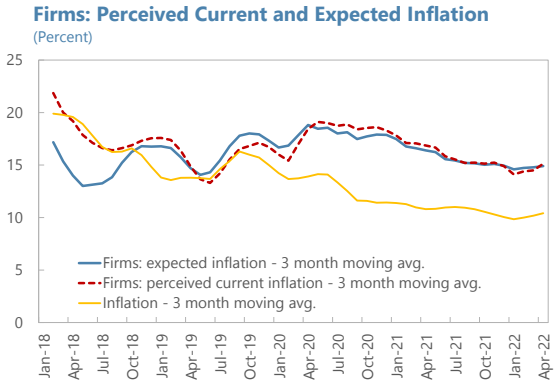


Sources: Country authorities; and IMF staff. estimates.

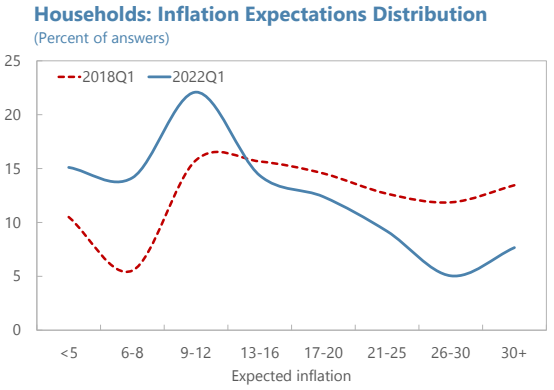
Figure 1. Inflation Developments



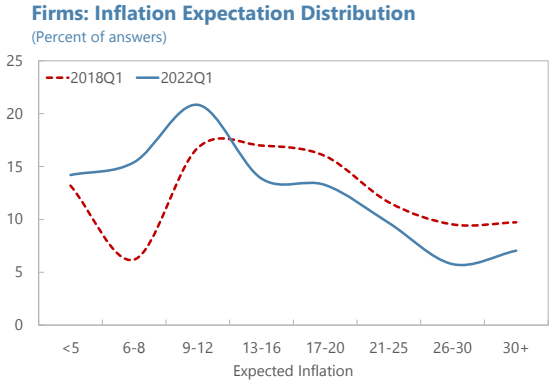
Sources: Country authorities; and IMF staff estimates.



Sources: Country authorities; and IMF staff estimates.



Sources: Country authorities; and IMF staff estimates.

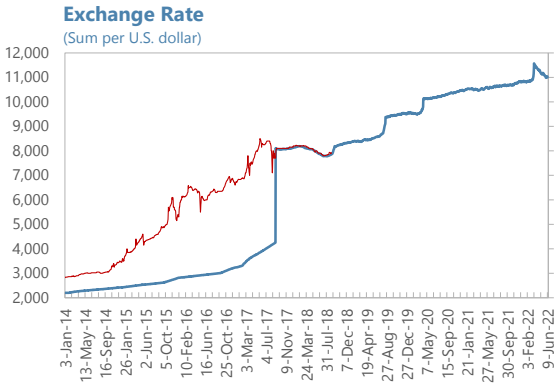


Sources: Country authorities; and IMF staff estimates.

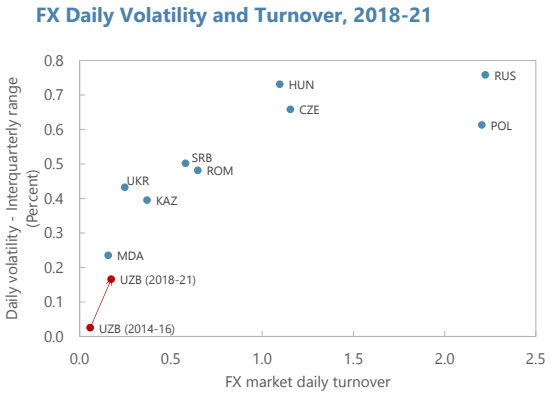
16. **The exchange rate has broadly moved in line with fundamentals.** However, with a relatively shallow market and with large government and SOE transactions, the CBU has found itself needing to intervene on a daily basis to avoid undue volatility. Thus, CBU intervention has been significant, although, this has not affected longer-term exchange rate trends as witnessed by the relatively stable level of the CBU's stock of international

[14] This bias, documented by economic literature (e.g. Van Duyne 1982, Coibion et al. 2018, and Murphy & Rohde 2018), is associated with the high sensitivity of CPI to food prices and energy prices that are linked to exchange rate.

reserves during 2017-20. Intervention has been largely determined by the so-called neutrality principle[15], which calls for sterilizing the domestic currency injected when the CBU buys gold from domestic gold producers. The day-to-day implementation of this intervention policy has, however, contributed to a relatively low level of daily exchange rate volatility, which, although having increased more recently, is substantially less than what can been seen in many inflation targeting peers (text figure). Prior to 2017, strict foreign exchange controls limited exchange rate volatility and hampered financial market development. Since the liberalization of the foreign exchange market in 2017, the CBU has gradually shifted to more market-based methods in its foreign exchange operations, to help deepen the market and facilitate trade[16]. As this has been a gradual process, the level of day-to-day exchange rate volatility has remained relatively limited[17]. In early 2021, the CBU implemented some reforms on FX market with the objective to promote market trading and consequently increase FX flexibility.



Sources: Country authorities, and IMF staff estiamtes.



Sources: IMF, staff estimates.

Assessing Institutions and Transmission

Assessing Preconditions

17. **Uzbekistan seems to meet several pre-conditions to transition to inflation targeting.** To document the overall progress toward implementing IT in a more quantitative and comparable manner, this paper follows the IMF (2006) methodology. This methodology—based on surveys and economic indicators— identifies the conditions that countries had before and after implementing IT. This approach covers four key areas: i) technical infrastructure of the central banks; ii) financial system health; iii) central bank institutional independence; and iv) economic structure. This methodology is indicative starting point.

[15] According to the neutrality principle policy, because the CBU has the priority to buy gold from domestic state-owned producers, CBU needs to sterilize the amounts from such gold purchases every year by selling foreign currency. Therefore, the CBU intervention has two objectives that are sterilizing gold purchases and stabilizing excess volatility, nevertheless markets cannot identify them.

[16] Until February 2021, a fixing structure determined a unique FX price for the day a result of banks' demand and supply plus CBU intervention. All market participants received the same price at the end of the session.

[17] International experience suggests that these dynamics of stability and step corrections foster the FX pass-through to prices.

Table 1. Economic Indicators Pre and Post Inflation Targeting Implementation
(Higher values imply better conditions to implement IT)

	Pre-adoption			Post-adoption		
	ICs	EMs	UZB (2016)	ICs	EMs	UZB (2021)
Technical infrastructure	**0.74**	**0.29**	**0.08**	**0.98**	**0.97**	**0.83**
Data availability	0.84	0.63	0.25	0.94	0.92	0.50
Systematic forecast process	1.00	0.10	0.00	1.00	1.00	1.00
Models capable of conditional forecasts	0.38	0.13	0.00	1.00	1.00	1.00
Financial system health	**0.53**	**0.41**	**0.34**	**0.60**	**0.48**	**0.40**
Bank regulatory capital to risk-weighted assets	0.75	0.75	1.00	1.00	1.00	1.00
Stock market capitalization to GDP	0.28	0.16	0.02	0.44	0.21	0.06
Private bond market capitalization to GDP	0.40	0.10	0.00	0.31	0.07	0.00
Stock market turnover ratio	0.28	0.29	0.00	0.35	0.22	0.00
Currency mismatch	1.00	0.92	1.00	1.00	0.96	1.00
Maturity of bonds	0.46	0.23	0.00	0.52	0.43	0.33
Institutional independence	**0.57**	**0.59**	**0.45**	**0.78**	**0.72**	**0.65**
Fiscal obligation	0.75	0.77	0.00	1.00	1.00	1.00
Operational independence	0.63	0.81	1.00	1.00	0.96	1.00
Central bank legal mandate	0.16	0.50	0.00	0.44	0.62	0.50
Governor's job security	1.00	0.85	0.00	1.00	0.85	0.50
Fiscal balance in percent of GDP	0.45	0.48	0.90	0.78	0.47	0.00
Public debt in percent of GDP	0.53	0.47	0.93	0.54	0.47	0.64
Central bank independence	0.44	0.26	0.28	0.72	0.64	0.92
Economic structure	**0.47**	**0.36**	**0.35**	**0.56**	**0.46**	**0.45**
Exchange rate pass-through (0=high, 1= low) 1/	0.31	0.23	0.00	0.50	0.44	0.00
Sensitivity to commodity prices	0.44	0.35	0.50	0.56	0.42	0.50
Extent of dollarization	1.00	0.69	0.00	1.00	0.75	0.50
Trade openness (0= fully open, 1= fully autartik)	0.13	0.18	0.90	0.16	0.21	0.81

Notes: ICs: industrialized countries
EMs: emeriging economies
1/ "0" means high pass-through, "0.5" means moderate pass-through, and "1" means low pass-through.
Source: IMF staff estimates and IMF 2006 (Batini, Laxton, and Rogers)

18. **This analysis suggests that Uzbekistan has making progress in meeting the pre-conditions for implementing IT, but that there are still some gaps.** The results show that the CBU has especially narrowed technical infrastructure gaps and to a less extent institutional gaps, but that further efforts are needed to strengthen institutional independence, while large gaps still exist related to financial system health and economic structure (Table 1). Specifically:

a. **Technical infrastructure of the central bank:** Improvements in forecasting and modeling suggests that Uzbekistan is close to the levels observed in other emerging economies that implemented IT. Data availability has improved significantly, despite there is still work ahead.

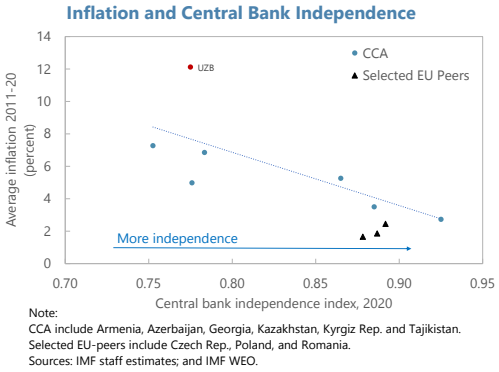
b. **Financial system health:** While reported banking indicators are consistent with countries that implemented IT, the underdeveloped capital market and short maturity of domestic bonds suggest that further financial development is needed to reach the levels observed in other emerging economies with IT regimes.

c. **Institutional independence:** Despite the recent improvements, economies that implemented IT showed stronger operational independence with a more robust mandate and governor job security. The data also suggest that the recent increase in fiscal deficits and public debt may complicate monetary policy in the future.

d. **Economic structure:** High foreign exchange pass-through, a high degree of dollarization, and a sensitivity to commodity prices indicate that Uzbekistan will need to continue with broader reforms to improve the country's economic structure similar to those observed in other emerging economies that adopted IT.

Institutional Preconditions Focus

19. **The CBU's institutional framework has improved as documented by the independence index.** To detail this progress, this paper computed a comprehensive index of central bank independence. The central bank independence index based on de-jure indicators (Jacome and Velazquez, 2005) shows that the CBU has made progress in securing greater independence. According to the calculation, the CBU score increased from 0.38 to 0.78—of an index where 1 is the maximum (Table 2) [18]. The index also reveals that there is still room to improve independence by fully adopting best practices, in particular by further enhancing CBU board governance.



Note:
CCA include Armenia, Azerbaijan, Georgia, Kazakhstan, Kyrgiz Rep. and Tajikistan.
Selected EU-peers include Czech Rep., Poland, and Romania.
Sources: IMF staff estimates; and IMF WEO.

Table 2. Modified Cukierman Index of Central Bank Independence *
(0= no independence, 1 most independent)

	UZB 2016	UZB 2020	Selected EU-Peers 2020**
Overall Central Bank Independence	**0.38**	**0.78**	**0.89**
Central Bank Board (0.20)	**0.44**	**0.44**	**0.79**
1. Term of office of Governor(0.20)	*0.33*	*0.33*	*1.00*
2. Who appoints the Governor (0.20)	*1.00*	*1.00*	*0.67*
3. Appointment and term of office rest of the Board (0.20)	*0.00*	*0.00*	*1.00*
4. Dismissal of Board members (0.30)	*0.25*	*0.25*	*0.75*
5. CEO allowed to hold another office in government (0.10)	*1.00*	*1.00*	*0.33*
Central Bank objectives (0.15)	**0.00**	**1.00**	**1.00**
6. Fundamental objective (1.00)	*0.00*	*1.00*	*1.00*
Policy formulation (0.15)	**0.80**	**0.90**	**0.90**
7. Who formulates monetary policy (0.50)	*1.00*	*1.00*	*1.00*
8. Government directives and resolution of conflicts (0.30)	*1.00*	*1.00*	*1.00*
9. Central Bank involvement in debt approval (0.20)	*0.00*	*0.50*	*0.50*
Central Bank lending (0.40)	**0.25**	**0.82**	**0.86**
10. Limitations on advances (0.15)	*0.00*	*1.00*	*1.00*
11. Lending to Government (0.30)	*0.00*	*0.50*	*0.67*
12. Who decides financing conditions to government (0.10)	*0.33*	*1.00*	*1.00*
13. Beneficiaries of Central Bank financing (0.10)	*1.00*	*1.00*	*1.00*
14. Interest rates in advances or lending (0.10)	*0.50*	*1.00*	*1.00*
15. LOLR (0.15)	*0.00*	*1.00*	*1.00*
16. Financial autonomy (0.10)	*0.67*	*0.67*	*0.56*
Accountability (0.10)	**0.75**	**0.75**	**1.00**
17. Accountability of Central Banks (0.75)	*1.00*	*1.00*	*1.00*
18. Central Bank transparency (0.25)	*0.00*	*0.00*	*1.00*

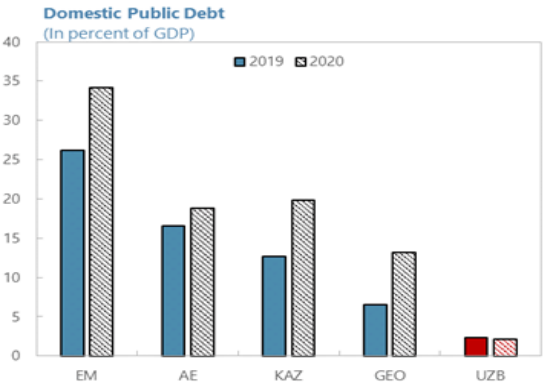
* Brackets display the weights of the different indicators.
** Average Czech Rep. Poland, and Romania.
Source: IMF staff estimates.

[18] One weakness of this index is that as it is de-jure, so it overestimates actual independence. Literature has documented that in developing countries a weak rule of law implies the actual independence is weak, despite high de jure indicators.

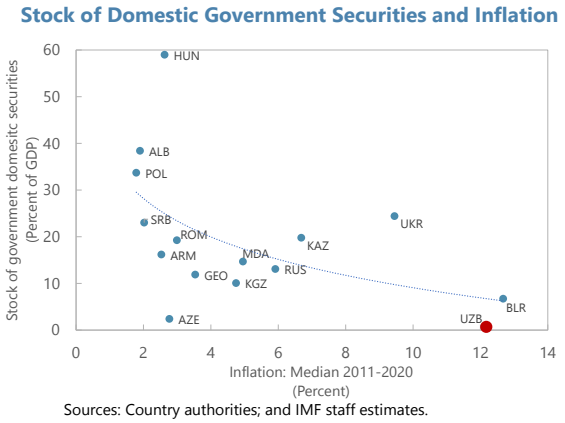
Transmission Mechanism Preconditions Focus

20. **Monetary policy transmission has been constrained in Uzbekistan, but it similarly has improved recently as reform implementation progresses.** The main factors that have constrained monetary policy transmission have been the limited development of financial markets, the high degree of dollarization, government credit policies, and the large footprint of state-owned banks and state-owned enterprises in the economy.

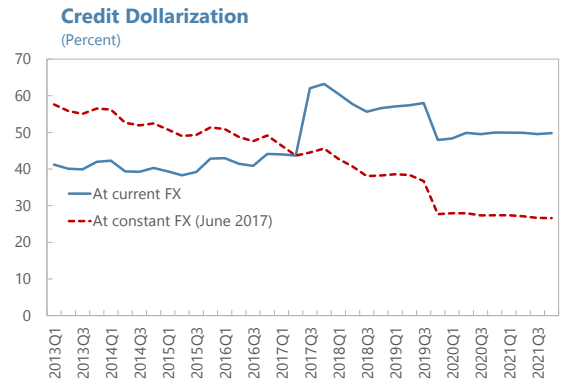
21. **Limited financial market development hampers interest rate transmission.** While the interbank market saw rapid development since early 2020, there are still some signs of market segmentation, as some banks are consistently borrowers or lenders in the market. The shallow government-securities' market for a critical to explain the limited interbank market. This reflects a combination of low demand for T-bills due to low domestic savings and low supply of T-bills due to high domestic interest rates linked to high inflation. As a result, substantial interbank lending is unsecured so risk limits cut-off some banks access.



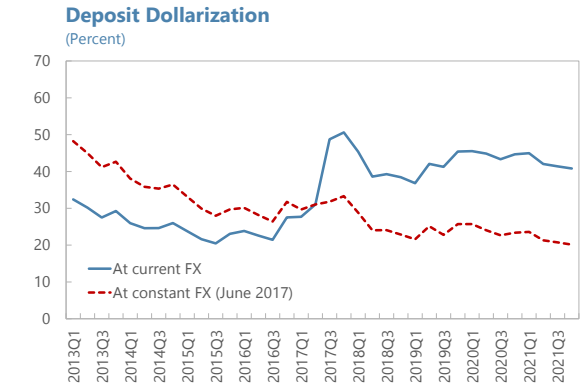
Sources: World Economic Outlook, and IMF Staff Calculations.



Sources: Country authorities; and IMF staff estimates.



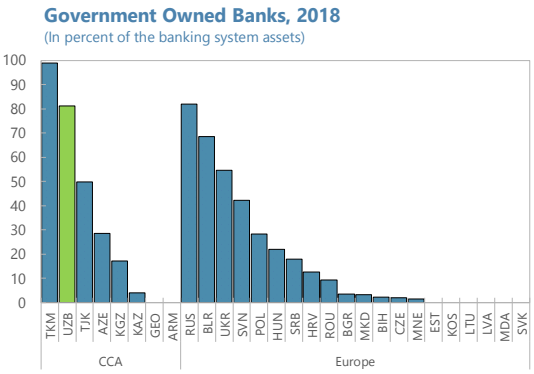
Sources: Country authorities; and IMF staff estimates.



Sources: Country authorities; and IMF staff estimates.

22. **A high degree of dollarization also hampers monetary policy transmission.** Uzbekistan's dollarization stood at 41 and 50 percent of deposits and credit, respectively, in 2021. Overall, dollarization reduces the base of credit and deposits over which monetary policy has effect. The higher the dollarization, the weaker the monetary policy transmission. Headline figures suggest that dollarization has increased due to exchange rate depreciation and as banks increased foreign borrowing to fund credit. However, after correcting the exchange rate revaluation effects, dollarization has broadly stabilized suggesting the CBU's relatively tight monetary policies have been helpful in discouraging dollarization.

23. **The dominance of state-owned banks and government lending initiatives have also constrained monetary policy transmission.** There are 11 state-owned banks out of 35 banks, accounting roughly for 82 percent of total banking sector's assets. These banks are still not fully operating on market-based rules, which in turn weakens the transmission of the CBU's policy rate to lending and deposit rates. The banks easy access to government funding as well as external funding has contributed to weakening transmission. In addition, government lending programs at preferential (i.e., below-market) interest rates also weaken transmission. Bank competition in Uzbekistan, which appears to be lower than in other countries in the region, remains limited due to the dominance of the state-owned banks.



Sources: IMF staff estimates.

24. **The large footprint of SOEs in the economy dampens competition and price flexibility.** Most SOEs do not operate fully on market principles, and as a result SOEs' prices follow costs and demand conditions with significant lags. Often, SOEs' price adjustments follow a centralized process and are discretional, even when their markets are not regulated. This adds to inflation inertia, and also hampering monetary policy effectiveness. SOEs also have better access to financing—as they have government guarantees and long-standing relations with state-owned bank—as a result of which monetary policy tightening impacts SOEs less than companies faced with hard budget constraints (Yang, 2017) and thus monetary policy is less effective.

25. **This paper aims to document some features of the transmission from the policy rate to retail interest rates, the inflation rate, and the exchange rate.** First, it assesses the transmission of monetary policy rates to retail rates using a simple OLS estimation method. Second, an assessment of the transmission from the policy rate to the inflation rate and exchange rate is conducted based on a vector autoregressive vector (VAR) model. These approaches have caveats but nonetheless provide useful insights.

26. **Structural and data limitation constrain the econometric analysis of the transmission from monetary policy rates to retail interest rates.** The transmission from policy rates to retail rates consists of three main components: i) the transmission from the central bank policy rate to the interbank market interest rate; ii) the transmission from the interbank market to the yield curve of safe assets, and iii) the transmission from the yield curve to retail interest rates. Data limitations and the relative underdevelopment of financial markets hamper the analysis for the first two components. Reliable interbank market data is only available since April 2018 and the government securities market is shallow, with very low trading volumes. As a result, econometric analysis cannot split these different stages of transmission, leaving only the analysis of the (overall) transmission from policy rates to short-term retail interest rates.

27. **The transmission from policy rates to banks' retails rates still needs to be enhanced in Uzbekistan.** This paper follows an approach similar to the methodology used by Angeloni and Ehrmann (2003) to estimate the elasticities of interest rates to monetary policy using simple regressions, due to the limited number of observations. Angeloni and Ehrmann (2003) aimed to assess the changes in monetary policy transmission of interest rates pre- and post-1999 when the ECB started operations. For Uzbekistan, a similar technique is used to assess the pass-through of the policy rate to market rates during pre- and post-September 2017 – when the foreign exchange market was liberalized and a new monetary policy approach was adopted. Figure 2 shows the data, and the estimated results that are summarized in Table 3 suggest the following:

a. The transmission from the policy rate to lending rates has strengthened. However, to interpret the results pre-2017, some caution is needed. For that period, the significant transmission seems associated with state-owned banks using policy rate as administrative base to price loans.

b. The transmission from the policy rate to deposit rates has increased but is not statistically significant.

c. Overall, the transmission mechanism seems to be constrained compared with other IT countries.

Figure 2. Selected Interest Rates

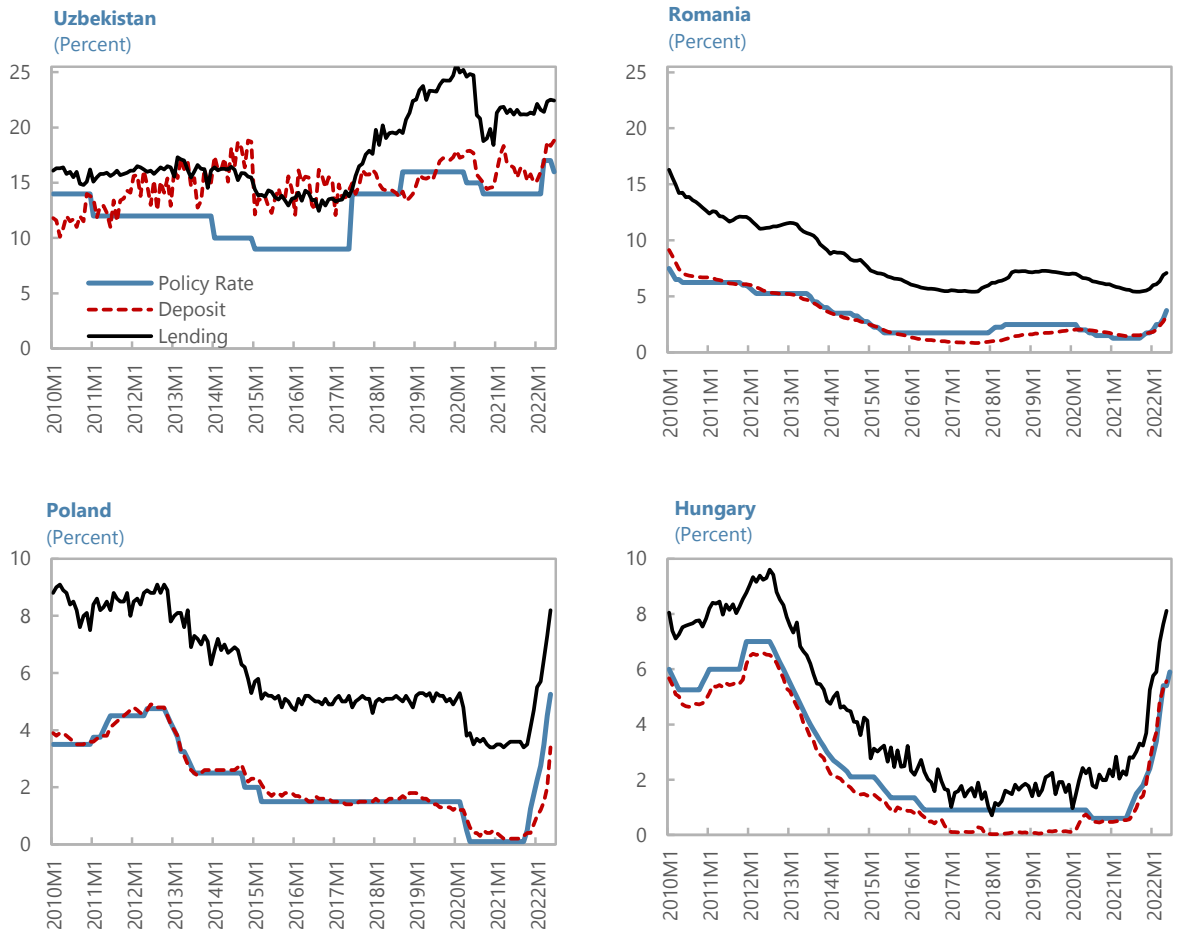


Table 3. Effect of Monetary Policy Rates on Retail Interest Rates
Elasticity of Retail Interest Rate to Monetary Policy Rates
(Percentage Points)

	2010M1-2017M8	2017M9-2022M7	**2010M1-2022M7**
Lending Rates			
UZB	0.30***	0.59**	**0.37*** **
Selected IT peers[1]			**0.68** **
Deposit Rates			
UZB	-0.05	0.35	**0.04**
Selected IT peers[1]			**0.77*** **

Note:

Based on OLS regression: ΔInterest rate "x_t" = $\alpha + \beta\Delta$Monetary Policy Rate$_t + \varepsilon_t$
Stars represent significant levels: ***, **, * represent 1%, 5% and 10% respectively.
1/ includes Poland, Hungary, and Romania.
Source: IMF Staff estimates

28. **To assess how inflation and exchange rates respond to changes in the policy, a multivariate vector autoregressive (VAR) model is estimated.** We estimate a simple VAR model of order n based on monthly data spanning from 2016:M12 to 2020:M10. Formally, the model can be written as follows:

$$Y_t = C + \sum_{k=1}^{n} A_k Y_{t-k} + \sum_{j=1}^{r} B_k X_{t-j} + \epsilon_t$$

Where Y_t is a vector of endogenous variables embedding the policy rate, the nominal effective exchange rate, and the core inflation rate[19]. X_t is a vector of lagged exogenous variables including global energy prices and food prices, C is a vector of intercepts, A_k and B_k are matrices of coefficients, and ϵ_t is a serially uncorrelated m-vector of errors with a zero mean and a constant positive definite variance-covariance matrix Ω. The order of lags is determined based on lag selection criteria. We rely on the Generalized Impulse Response Functions (GIRF) proposed by Pesaran and Shin (1998) in our analysis because they do not require the orthogonalization of shocks and they are invariant to the ordering of the endogenous variables in the VAR system[20]. All variables except the policy rate are expressed in logarithm form.

29. **Empirical results reveal that the response of core inflation to changes in the policy rate is less than expected for a developing economy.** The results from the generalized impulse response functions (IRFs) indicate the following:

a. The policy rate seems to reduce the core inflation rate, but the results are statistically insignificant, as shown by the response of core inflation rate to the policy rate shock.

b. Inflation appears to respond to changes in the exchange rate, although this too is statistically insignificant.

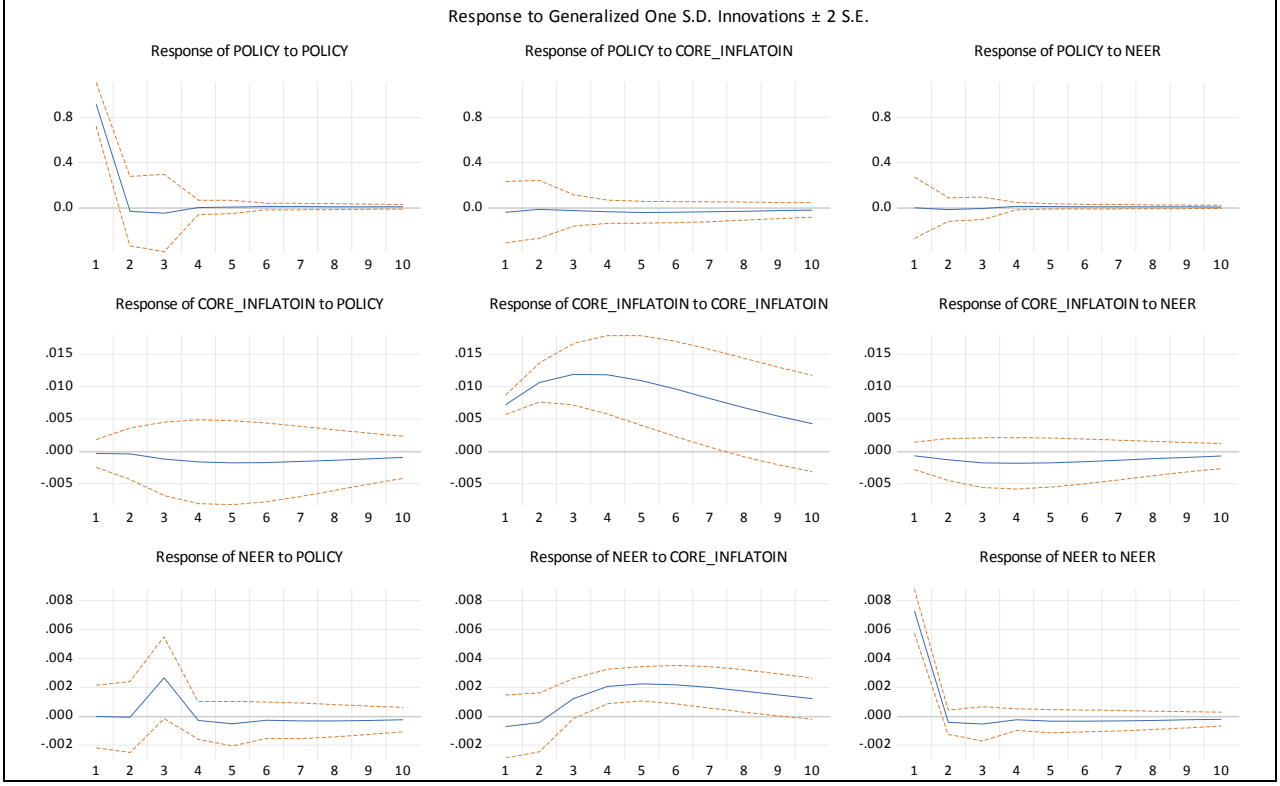
c. These combined results also indicate that there are constraints on the effectiveness of the transmission of monetary policy[21].

[19] Core inflation is defined as headline inflation excluding regulated prices as well as fruits and vegetables prices.

[20] The augmented dicky-fuller unit root test is conducted to check the properties of the data and reveals that all variables are non-stationary and integrated of order one. Hence, the first order of the variables is used in our analysis.

[21] We reach a similar conclusion for the headline inflation rate.

Figure 3. VAR Response to Generalized One S.D. Innovations



Challenges and Recommendations

Increasing Credibility

30. **Central bank independence, transparency, and governance can be improved further to achieve best practices.** Improving credibility is critical for monetary policy effectiveness[22]. This requires de-facto independence and predictability of policy[23]—a difficult task in Uzbekistan as pre-2017 CBU policy was discretional and followed government instructions. The situation improved drastically since then, as mentioned before. High transparency and strong corporate governance standards are key to reduce discretion, by ensuring accountability of policies and executive board functions. One particular area with room for improvement is strengthening governance of the executive board. While the CBU's executive board has been functioning well, there is a high rotation on its members and a limited number of independent board members. More checks and balances can ensure that the CBU meets best practices[24]. These issues can be addressed by setting terms (in years) for all executive board members and clarifying criteria for selection and dismissal. In addition, best practice calls for independent board members to have a majority or for a large proportion of the board to have an oversight

[22] Bordo and Siklos 2015.

[23] Blattner and others 2008.

[24] Currently there are limited checks and balances given the chairman recommend appointment and removal of board members to the president.

role. In particular, independent board members have a leadership role in the external audit committee in best practices countries. Finally, as the central bank's policies are reflected on its balance sheets, the CBU should adopt IFRS and publish audited financial statements.

31. **Coordination with the government on policies that affect inflation can be enhanced.** Key examples of policies that affect transmission and inflation are preferential lending programs, utilities price regulation, and public sector wage policies. In particular, preferential loans are sizable and have directed nature – these include loans for family entrepreneurs, targeted sectors and SOEs. Further support from the government by providing predictability and ensuring close coordination are key to successfully implementing inflation targeting.

Improving Transmission of Monetary Policy

32. **Financial market development is needed to enhance interest rate transmission** While the CBU has taken steps to deepen the interbank market, further actions, such as establishing a money market working group[25] to develop market conventions and standards governing interbank transactions, including the development of a money market benchmark rate, a standard master repo agreement, and developing the clearing and settlement infrastructure for the interbank repo transactions. As a result of this work the CBU published a methodology for the benchmark interbank interest rate in July 2022

33. **It is key to reducing the role of FX on inflation expectations by increasing FX volatility.** Moderate levels of FX (daily) volatility can reduce the role of FX as key driver of inflation expectations. In a context of moderate FX-volatility and unpredictable FX-trend agents perceive FX fluctuations can be reversed so the link between FX and inflation becomes weaker. This requires developing the FX market. The 2021 FX market restructuring is a step forward. The implementation requires several critical elements. First more transparency about the FX intervention rules is needed by providing more information regarding the FX principles and objectives, operational guidelines clarifying when and how to intervene, and strategic tactics illustrating the specific response to market developments. Second, the transition to a price discovery market can be supported by setting FX multiple price auctions. Finally, adopting a version of the Global FX code or introducing market arrangement will be important.

34. **Reducing dollarization requires greater incentives to save in local currency.** International experience points to several measures that can be effective in reducing dollarization and making the local currency more attractive, as highlighted by several studies including Rennhack and Nozaki (2006), García-Escribano (2010), Kokenyne, et al. (2010), García-Escribano and Sosa (2011), Khandelwal et al. (2022). These studies emphasize a combination of polices – macroeconomic stability policies, prudential policies, and developing capital markets – that are all essential ingredients for successfully building trust in the national currency and in the banking system and reducing the degree of dollarization. Examples of specific measures include imposing higher reserve requirements on foreign currency deposits, raising insurance premiums on dollar deposits, holding reserve requirements for foreign currency deposits in local currency, requiring tighter provisioning requirements on foreign currency loans, as well as developing markets for instruments to hedge currency risks. Table 4 shows some successful country experiences in reducing dollarization.

[25] The working group was established in 2020 with the EBRD support. The group includes 3 EBRD experts, key CBU departments and commercial banks' representatives and meets at least once a quarter.

Table 4. Country Experiences with Dollarization Policies and Measures

Type of instrument	Type of dollarization	Measure introduced	Country (date)
Exchange Rate Policy	All dollarization	Exchange rate flexibility	**Laos, P.D.R** (1995), a floating exchange rate system was introduced. **Turkey** (2001), foreign exchange interventions allowing for two-way FX volatility.
Monetary Policy	Deposit dollarization	Interest rate increase on LCD	**Egypt (**1991-1999) **Estonia (**1992-1994) **Hungary (**1995-1996)
Fiscal Policy (Taxation)	Deposit dollarization	Exemption of local currency deposits from the financial tax (made permanent for FCD)	**Bolivia (**2006)
Developing local financial markets	Financial dollarization	Development of local currency market	**Angola (**2001) **Peru (**1985-1987)
Improving the use of the local currency	Transaction dollarization	Improving the quality of the banknotes	**Angola** (2001)
Reserve Requirements	Deposit dollarization	Reserve requirement more favorable on local currency liabilities	**Belarus (**since 2001) **Croatia** (2000) **Pakistan** (1998-2003)
Loan to value (LTV) requirements	Loan dollarization	Lower LTV ratio for loans in foreign exchange	**Hungary.** The LTV ratio is set at 80 percent for local currency loans, 60 percent for euro loans, and 40 percent for other currency loans. **Georgia** (2019) The LTV ratio is set at 85 percent for local currency and 70 percent for foreign currency loans[26].
Provisioning requirements	Banks' foreign currency credit to households and firms.	Tighter provisioning Requirements on foreign currency loans	**Albania (**2007) An additional provision of 5 percent is required on all unhedged substandard and doubtful loans.

Source: Dedollarization – IMF working Paper by Kokenyne et al. (2010).

35. **Broader financial sector reforms, notably to reduce the role of state-owned bank, will also be key to strengthen monetary policy transmission mechanism.** This requires imposing hard budget constraints on state-owned banks, improving their governance, including by appointing independent and qualified board members, reducing government funding, as well as their eventual privatization. Meanwhile, bank supervision will need to be strengthened further.

36. **More broadly, the role of the state in the overall economy should be reduced too.** To ensure effective transmission, the economy should operate on market principles and with businesses, notably SOEs, facing hard budget constraints. This would help to ensure that changes in monetary policy will affect SOEs' financial

[26] According to Financial Stability Report of 2019 published by National Bank of Georgia.

decisions. This can be achieved by reducing financial assistance and guarantees for SOEs, but also improving their corporate governance. In addition, energy prices should ultimately also become market determined to avoid distortions and help achieve a more efficient allocation of resources.

37. **During the transition to inflation targeting, the central bank's policy design will need to consider the particular challenges posed by the large role of the government in the economy.** As mentioned above, there are several issues—including the large role of the state not only in the overall economy but also in the banking sector, administrative prices, government lending programs at preferential interest rates, and fiscal dominance—that limit the central bank's ability to improve the effectiveness of monetary policy. During the transition, it is pivotal to recognize these limitations to monetary policy implementation and the tools to be applied, and to work with the government to reduce the role of the state in the economy.

Conclusion

38. **Uzbekistan has made impressive progress toward meeting the conditions for successful IT implementation, but more work still needs to be done, especially to improve the structure of the economy.** Uzbekistan meets many pre-conditions to implement IT. The central bank has improved its institutional and governance set-up, forecasting capacities, monetary operations, policy formulation, and communication, although some further steps are needed to enhance the CBU's governance. However, to enhance monetary policy transmission, it is key to develop the domestic capital and foreign exchange markets, reduce dollarization, and reduce the role of the government in the economy. The large role of the government both in the ownership of banks but also in the broader economy, combined with government lending policies have constrained monetary policy transmission.

Annex I. Inflation Targeting Conditions Details

Technical infrastructure:

- Data availability: Considers if all essential macroeconomic data available (GDP, employment, CPI) at the time of inflation targeting adoption. Answers were coded as:

1.00	if all data were available, reliable, and of good quality.
0.75	if data were all available, but one were not reliable or of good quality.
0.50	if data were all available, but a few were not reliable or of good quality.
0.25	if all data were available but most were either highly unreliable because, for example, they were typically subject to large revisions or only available at low frequencies
0.00	if any data were missing.

- Systematic forecast process: Considers if the forecasting capabilities in place (near term forecast suit models for inflation and activity) at the time of adoption. Answers were coded as:

1.00	if a periodic, systematic forecast process was already in place.
0.00	if no such process was in place.

- Models capable of conditional forecasts: Considers if the central bank has forecasting models capable of generating conditional forecasts. Answers were coded as:

1.00	if yes
0.00	if no

Financial System health

- Bank regulatory capital to risk-weighted assets: Percentage of banks' risk-weighted assets. Answers were coded as:

1.00	if the country's banking system (in aggregate) had regulatory capital in excess of 10 percent of risk-weighted assets
0.00	if the country does not meet this standard.

- Stock market capitalization to GDP: Variable scaled by United kingdom market capitalization ratio (that is UK = 1).
- Private bond market capitalization to GDP: Variable scaled by United kingdom private bond market capitalization ratio (that is UK = 1).
- Stock market turnover ratio: Variable scaled by United kingdom stock market turnover ratio (that is UK = 1).
- Currency mismatch: Considers the degree of currency mismatch faced by domestically owned banks (Self-assessment). Answers were coded as:

1.00	if the degree of mismatch was considered as "none" or "low."
0.50	if the degree of mismatch was considered as "some" or "moderate" mismatch.
0.00	if the degree of mismatch was considered as "high."

- Maturity of bonds: Considers the maximum maturity of actively traded bonds (in years) and divided by 30. So a country with actively traded 30-year bonds were assigned a value of 1 for this variable.

Institutional Independence

- Fiscal obligation: Considers if the central banks has an obligation, either implicit or explicit, to finance government budget deficits. Answers were coded as:

1.00	if no such obligation.
0.00	Otherwise.

- Operational independence: considers whether the central bank had full "instrument independence," giving it sole responsibility for setting the monetary policy instrument. Answers were coded as:

1.00	if yes.
0.00	Otherwise.

- Central bank legal mandate: Considers if there is an inflation-focused legal mandate. Answers were coded as:

1.00	if inflation is the only formal objective.
0.50	if other objectives are specified, but inflation takes precedence.
0.00	if other objectives are specified on an equal footing with inflation.

- Governor's job security: Average of Arnone and others (2005) questions on i) who appoints the central bank governor and term of the governor in office.
- Fiscal balance in percent of GDP: Considering primary fiscal balance to GDP a variable was created indicating a lack of pressure to finance fiscal deficits. This ratio was converted to a score ranging from 0 to 1 using a logistic transformation. This was scaled in a way that a budget that was in balance or in surplus was assigned a value of 1, and a budget deficit in excess of 3 percent of GDP was assigned a value of 0.
- Public debt in percent of GDP: Using the ratio of public debt to GDP, a variable was created equal to 1 minus the ratio of debt to GDP. Thus, a country with no public debt would receive a value of 1, and one with a ratio of debt to GDP equal to or greater than 100 would receive a value of 0.
- Central bank independence: "overall" measure (the average of political and economic) of central bank independence following Arnone and others (2005). A value of 1 indicates complete independence while values closer to 0 indicate a diminishing degree of independence.

Economic structure

- Exchange rate pass-through: considers the degree of exchange rate pass-through. Answers were coded as:

1.00	if low or no pass-through.
0.50	if moderate pass-through.
0.00	if high pass-through.

- Sensitivity to commodity prices: Considers the degree of sensitivity of inflation to commodity price fluctuations. Answers were coded as:

1.00	if not sensitive.
0.50	if sensitive.
0.00	if very sensitive.

- Extent of dollarization: consider the extent of deposits dollarization. A variable was coded as:

1.00	if the share of dollarized deposits was 50 percent or higher.
0.50	if the share of dollarized deposits was 10-50 percent.
0.00	if the share of dollarized deposits was less than 10 percent

- Trade openness: considers the ratio of exports plus imports to GDP. This ratio was then scaled to that of Singapore (the economy with the largest trade share relative to GDP) and subtracted from 1, resulting in an index that would equal 1 in the hypothetical case of a completely autarkic economy, and equal 0 for an economy with a degree of trade openness comparable to that of Singapore.

References

Angeloni, I. and Ehrmann, M., 2003, “Monetary transmission in the euro area: early evidence,” *Economic Policy*, Vol. 18, No. 37, pp. 469–501.

Al-Mashat, R., Bulif, A., Dencer, N. N., Hledik, T., Holub, T., Kostanyan, A., Laxton, D., Nurbekyan, A., Portililo, R., and Wang, H., 2018, “An index for transparency for inflation targeting central banks: Application to the Czech National Bank,” IMF Working Paper No. WP/18/210 (Washington: International Monetary Fund).

Batini, N., and Laxton, D. 2005, “Under What Conditions Can Inflation Targeting be Adopted? The Experience of Emerging Markets,” forthcoming in *Monetary Policy Under Inflation Targeting* ed. by Schmidt-Hebel and Mishkin, (Santiago: Banco Central de Chile).

Blattner, T., S., Catenaro, M., Ehrmann, M., Strauch, R., & Turunen, J., 2008, "The predictability of monetary policy," Occasional Paper Series 83, European Central Bank.

Bordo, M. D., and Siklos, P. L., 2015, “Central Bank Credibility Before and after the Crisis,” (November 2015). NBER Working Paper No. w21710.

Coibion, O., Yuriy G., and Saten, K. 2018, "How Do Firms Form Their Expectations? New Survey Evidence," *American Economic Review*, Vol. 108, No.9, pp. 2671-2713.

Financial Stability Report 2019. National Bank of Georgia.

Freedman, C. and Otker-Robe, I., 2009, “Country Experiences with the Introduction and implementation of Inflation Targeting,” IMF Working Paper WP/09/161. (Washington: International Monetary Fund).

Freedman, C. and Otker-Robe, I. 2010, “Important Elements for Inflation Targeting for Emerging Economies,” IMF Working Paper WP/10/113. (Washington: International Monetary Fund).

García-Escribano, M., 2010, “Peru: Drivers of De-dollarization,” IMF Working Paper WP/10/169. (Washington: International Monetary Fund).

García-Escribano, M. and Sosa, S. 2011, “What is Driving Financial De-dollarization in Latin America?,” IMF Working Paper WP/11/10. (Washington: International Monetary Fund).

Hammond, H. 2012, “State of the Art of Inflation Targeting,” Handbook No. 29, Centre for Central Banking Studies (London: Bank of England).

International Monetary Fund, 2020, “*Annual Report on Exchange Arrangements and Exchange Restrictions 2019”* (Washington: International Monetary Fund).

International Monetary Fund, 2015, “*Evolving Monetary Policy Frameworks in Low-income and other developing countries*,” IMF Staff Report (Washington: International Monetary Fund).

International Monetary Fund, 2006, “Inflation Targeting and the IMF,” Policy Papers (Washington: International Monetary Fund).

International Monetary Fund. Research Department, 2005. "Chapter IV Does Inflation Targeting Work in Emerging Markets?". In World Economic Outlook, September 2005: Building Institutions.

Jácome, L. I., and Vázquez, F, 2005, “Any Link between Legal Central Bank Independence and Inflation?: Evidence from Latin America and the Caribbean,” IMF Working Paper No. 05/75. (Washington: International Monetary Fund).

Kokenyne, A., Ley, J., and Veyrune, R. 2010, “Dedollarization,” IMF Working Paper WP/10/188. (Washington: International Monetary Fund).

Khandelwal, P., Mirzayev, S., Cabezon, E., and Al-Farah, R., 2022 “Macroprudential Policies to Enhance Financial Stability in the Caucasus and Central Asia” IMF Departmental Paper. (Washington: International Monetary Fund).

Laurens, M. B., Eckhold, K., King, D., Mæhle, M. N. Ø., Naseer, A., & Durré, A., 2015. *The journey to inflation targeting: Easier said than done the case for transitional arrangements along the road*. Working Paper WP/15/136. (Washington: International Monetary Fund).

Murphy, R., and Rohde, A., 2018, "Rational Bias in Inflation Expectations," *Eastern Economic Journal*, Vol. 44, No.1, pp. 153–171.

Pesaran, H. H., & Shin, Y., 1998. "Generalized impulse response analysis in linear multivariate models." *Economics letters*, *58*(1), 17-29.

Rennhack, R. and Nozaki, M., 2006, "Financial Dollarization in Latin America", *IMF Working Paper* no. 06/7. (Washington: International Monetary Fund).

Roger, S. and M. Stone, 2005, "On Target? The International Experience with Achieving Inflation Targets," IMF Working Paper WP/05/163. (Washington: International Monetary Fund).

Roger, S. 2009, "Inflation Targeting at 20: Achievements and Challenges," IMF Working Paper WP/09/236. (Washington: International Monetary Fund).

Sløk, T. 2000, "Monetary Policy in Transition: The Case of Mongolia," IMF Working Paper 00/21 (Washington: International Monetary Fund).

Van Duyne, Carl. 1982, "Food Prices, Expectations, and Inflation," *American Journal of Agricultural Economics,* Vol. 64, No. 3, pp. 419–430.

Walsh, C., 2009, "Inflation Targeting: What Have we Learned?" *International Finance,* Vol. 12, No.2, pp. 195–233.

Yang, X., Han, L, Li, W., Yin, X., and Tin, L. 2017, "Monetary policy, cash holding and corporate investment: evidence from China", *China Economic Review*, Vol. 46, No. C, pp. 110-122.

PUBLICATIONS

[Title of Working Paper: Subtitle (As Needed)]

Working Paper No. [WP/YYYY/###]