



MONETARY POLICY TRANSMISSION IN UZBEKISTAN UNDER THE INFLATION TARGETING FRAMEWORK

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Abstract. This paper discusses the mechanism of transmission of the monetary policy in Uzbekistan in the framework of the inflation targeting (IT) which is officially followed by the Central Bank of Uzbekistan since 2021 (CBU). The analysis indicates that the main refinancing rate is transmitted into the financial system to impact output and prices using methods of Vector Autoregression (VAR) and Structural VAR (SVAR) on quarterly data covering 2010-2023. The results show that interest rate channel is the most effective transmission channel, exchange rate channel comes next and credit channel is limited by structural weakness in the banking sector. The monetary policy shocks explain about 18-22 percent of inflation variance at a 12-month horizon. Some of the major obstacles are dollarization, strong state-owned banking industry, ineffective financial intermediation and low financial literacy. Some of the policy prescriptions include complementary fiscal moderation, faster financial sector reform, and better communication by the central bank.

Keywords: monetary policy transmission, inflation targeting, Uzbekistan, Vector Autoregression, interest rate channel, exchange rate channel, Central Bank of Uzbekistan, financial dollarization.

O'ZBEKISTONDA INFLYATSION TARGETLASH SHAROITIDA PUL-KREDIT SIYOSATI TRANSMISSIYASI

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Annotatsiya. Ushbu maqolada O'zbekistonda 2021-yildan boshlab Markaziy bank tomonidan rasman qo'llanilayotgan inflyatsion targetlash rejimi doirasida pul-kredit siyosati transmissiya mexanizmi muhokama qilinadi. Tahlil natijalari shuni ko'rsatadiki, asosiy qayta moliyalash stavkasi moliyaviy tizim orqali ishlab chiqarish hajmi va narxlarga ta'sir ko'rsatadi. Bunda 2010–2023-yillarni qamrab olgan choraklik ma'lumotlar asosida Vektor Avtoregressiya (VAR) va Strukturaviy Vektor Avtoregressiya (SVAR) usullaridan foydalanilgan. Natijalar foiz stavkasi kanali eng samarali transmissiya kanali ekanini, undan keyin valyuta kursi kanali kelishini, kredit kanalining esa bank sektoridagi tarkibiy zaifliklar sabab cheklanganligini ko'rsatadi. Pul-kredit siyosati shoklari 12 oylik ufqda inflyatsiya dispersiyasining qariyb 18–22 foizini izohlaydi. Asosiy to'siqlar sifatida dollarizatsiya, davlat ulushi yuqori bo'lgan bank sektori, moliyaviy vositachilikning samarasizligi va moliyaviy savodxonlikning past darajasi qayd etilgan. Siyosiy tavsiyalar qatoriga fiskal siyosatni muvozanatlashtirish, moliyaviy sektor islohotlarini jadallashtirish hamda Markaziy bank kommunikatsiyasini kuchaytirish kiradi.

Kalit so'zlar: pul-kredit siyosati transmissiyasi, inflyatsion targetlash, O'zbekiston, Vektor avtoregressiya, foiz stavkasi kanali, valyuta kursi kanali, O'zbekiston Markaziy banki, moliyaviy dollarizatsiya.

ТРАНСМИССИЯ ДЕНЕЖНО-КРЕДИТНОЙ ПОЛИТИКИ В УЗБЕКИСТАНЕ В УСЛОВИЯХ РЕЖИМА ИНФЛЯЦИОННОГО ТАРГЕТИРОВАНИЯ

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Аннотация. В данной статье рассматривается механизм трансмиссии денежно-кредитной политики в Узбекистане в рамках режима инфляционного таргетирования, который официально применяется Центральным банком Узбекистана с 2021 года. Анализ показывает, что основная ставка рефинансирования передаётся через финансовую систему и влияет на объёмы выпуска и уровень цен. Для исследования использованы методы векторной авторегрессии (VAR) и структурной векторной авторегрессии (SVAR) на основе квартальных данных за 2010–2023 годы. Результаты показывают, что канал процентной ставки является наиболее эффективным каналом трансмиссии, за ним следует валютный канал, тогда как кредитный канал ограничен из-за структурных слабостей банковского сектора. Шоки денежно-кредитной политики объясняют около 18–22 процентов дисперсии инфляции на горизонте 12 месяцев. К числу основных препятствий относятся долларизация, высокая доля государственных банков, неэффективное финансовое посредничество и низкий уровень финансовой грамотности. Среди основных рекомендаций выделяются более сдержанная фискальная политика, ускорение реформ финансового сектора и улучшение коммуникации со стороны Центрального банка.

Ключевые слова: трансмиссия денежно-кредитной политики, инфляционное таргетирование, Узбекистан, векторная авторегрессия, канал процентной ставки, валютный канал, Центральный банк Узбекистана, финансовая долларизация.

Introduction.

The globalization of the inflation targeting is one of the most significant institutional changes in the central bank of the past three decades. Since 1990, over 45 countries now of varying degrees of development have followed the lead of the IT structures implemented by New Zealand, following the optimism of stable prices, increased transparency and firm expectations of inflation. The transition and emerging economies poverty have its special implication on the IT use, as this is the unequivocal termination of discretion on monetary policy and the introduction of rule-based policies that facilitate credibility-enhancing governance.

In the past 10 years, the macroeconomic trend of Uzbekistan has been amazing. Following decades of restructuring of the Soviet system with inadequate directions of what the post-Soviet system would be, such as administrative price controls, many currency regimes and state ownership, in 2017 with President Shavkat Mirziyoyev the government embarked on a personal liberalization program. The convertibility of the currencies had been restored, the barriers to the trade were removed, the liberty of the private sector had been given and the most necessary amendments in the financial system had been launched. This is against this background that in 2021, the Central Bank of Uzbekistan formally adopted the inflation targeting model.

This move poses some fundamental rudimentary questions regarding the efficiency of the monetary policy in the given institutional framework in Uzbekistan. A broad sense of transmission is becoming anticipated in the developed economies characterized by deep financial markets that have flexible exchange rates and well anchored expectations. However, in the economies with underperforming financial markets like the Uzbekistan where the banks are controlled by the state and where the dollarization is the order of the day and the central

bank is building credibility with a poor reputation, transmission mechanism can be much weaker, slower, or distorted.

The contribution of the article to the literature is the first systematic multi-channel empirical research on the transmission of monetary policy in the Uzbekistan based on the post-IT adoption data and SVAR identification that considers the country-specific shock structure peculiarities and explicitly presents the results of the econometric study in the context of the institutional peculiarities.

Literature review.

Liquidity preference theory of Keynes (1936) and the IS-LM model of Hicks (1937) are the theoretical foundations of transmission of monetary policy. In interest rate channel, expansionary monetary policy is able to stimulate investment and consumption due to lowering the cost-of-capital effect by lowering the short-term rates. This was then followed by Bernanke and Blinder (1988) which gave credit channel and by Bernanke, Gertler, and Gilchrist (1996) which gave the channel of the balance sheet and the effects that monetary policy has on the net worth of the borrower and value of a collateral. Following Dornbusch (1976), the open-economy models triggered the emergence of the exchange rate channel.

In flexible exchange rates and the uncovered interest parity, when the monetary policy tightens, the value of the domestic currency will rise, foreign inflation imports and expenditure will fall and will be redirected towards foreign commodities. This is particularly where small open economies are involved, they are import driven and the pass through of the commodity price is high. Asset price channel is grounded on the q and wealth effects of Tobin though it requires built-up and liquid financial markets. The expectation channel, which is a central constituent of the New Keynesian models (Galí, J., & Gertler, M., 1999) is that within an IT the proclamation of plausible inflation target is a direct anchor of the long-run inflation anticipations.

In the emerging economies, it is always witnessed that there are differences in the monetary transmission literature in terms of structural and institutional factors. As shown and mentioned by Mishra, Montiel and Spilimbergo (2012), the channel of interest rate is significantly less powerful in low-income countries as compared to their counterparts in the high-income economies because the financial markets are shallow and state banks dominate the banking system and interest rate pass through is lower by 30-50 percent in comparison to that in the high-income economies. Calvo and Reinhart (2002) have discovered the fear of floating to be one of the primary constraints and Cespedes, Chang, and Velasco (2004) have managed to demonstrate that dollarization of high liability can create contractionary impacts on the balance sheet that offset the traditional expenditure switching channel.

Under the case of transition economies, Egert and MacDonald (2009) assert what they found was that after banking industry changes in the Central and Eastern European economies, there were more improvements in interest rate pass-through as well. The generalization of this analysis to the post-Soviet economies of Central Asia by Tikhonenko and Kuznetsov (2021) established that exchange rate pass-through is the most dominant effect of interest rates because they are highly dollarized economies that have commodity exports as a structural imperative. However, in the case of Uzbekistan specifically, where only Davlatov (2026) is able to discover the existence of an operational interest rate channel based on finding slow credit aggregate responses, Komilov (2025) estimate that the exchange rate pass-through to CPI is approximately 0.15-0.20 in 6 months.

The CBU observed a regime of implicit exchange rate targeting regime between around 2003 and 2017 overlaying further credit ceilings and reserve requirements. The official exchange rate was considerably higher than parallel market rate, even up to 30-40 per cent which had enormously distorting implications and parallel foreign exchange market. One of the causes of monetary expansion was directed credit to state owned enterprises. The watershed

incident was as of September 2017 when Uzbekistan opened its foreign exchange market that led to an immediate one-time change of its exchange rate by approximately 50 and a consequent pressured increase in its price level.

The preparation period prior to the actual transition to IT was 2019-2021. The CBU received a price stability policy, commenced to release quarterly Monetary Policy Reports, worked out an inflation forecasting model based on technical assistance of IMF as well as introducing open market operation to maintain an overnight level of interbank rate within a range that is above and under the main refinancing rate. It was stated in March 2021 that there would be an inflation target of 5% (+ or -1.5 percentage points) to be met in medium-term, and that IT adoption will happen.

The Uzbekistani banking sector is excessively bank-based. By 2023, the banking sector has an amount of 55-60 percent of GDP in terms of total assets, and capital markets only have less than 5 percent of GDP in terms of capitalization. The five largest state-owned banks, the NBU, Asaka Bank, Agrobank, Uzpromstroybank, and Ipoteka Bank, hold about 70 percent of all assets, 68 percent of the total deposits and 72 percent of all credit. This is a heavy-handed form of structure of a state-central bank transmission (calculated at an estimated 35-40 percent of aggregate bank credit outstanding in 2022) that is captured in the prices of administratively determined rates that is not reflected by the primary refinancing rate information.

Financial dollarization, albeit declining following the reforms, remains high: foreign currency deposits made 45 percent of total deposits as of Q2 2023, a decline of 55 percent of that of 2019 but still compared to the range of 20-25 percent seen in successful de-dollarized economies. Most of these are government securities, which capitalize their asset markets by means of asset pricing are largely ineffective, there are immature capital markets, most of which have supposedly re-opened in 2020, and they have become increasingly issuing of securities.

Research methodology.

The quarterly data used as the empirical analysis will be between Q1 2010 and Q4 2023, which will consist of 56 observations. The data comprise: (1) CPI inflation -12-month percentage change (which was retrieved in Uzstat and is confirmed against the IMF Article IV data); (2) the main refinancing rate (MRR)-end of quarter level; (3) real GDP at 2015 constant prices; (4) total bank credit to the private sector as a percentage of GDP; (5) nominal and real effective exchange rate; (6) weighted average deposit and lending rate; and (7) M2 monetary aggregate. The external regressors are IMF Primary Commodity Prices index, the Russian GDP growth (to generate remittances dynamics) and the Federal Funds Rate of the United States. Seasonal adjustment of GDP and credit series will be done through X-13-ARIMA-SEATS.

Table 1.

Descriptive Statistics

Variable	Observations	Mean	Standard Deviation	Min	Max
CPI Inflation (%)	56	11.4	4.2	5.1	22.3
MRR (%)	56	13.8	2.6	7.0	16.0
Real GDP Growth (%)	56	5.2	2.8	1.9	8.1
Credit/GDP (%)	56	28.3	8.7	15.2	41.6
NEER (Index)	56	68.5	19.3	40.1	100.0
M2 Growth (%)	56	22.7	9.1	8.4	47.3

The VAR model is the most significant econometric model. The reduced form VAR will be described as: $Y_t = A_0 + A_1 Y_{t-1} + A_2 Y_{t-2} + \dots + A_p Y_{t-p} + \varepsilon_t$, where Y_t is the endogenous variables,

A_i are coefficient matrices, p is the lag length which is defined through the AIC/SBIC criteria, and et is the reduced-form residual. The base specification has six variables within the country namely CPI inflation, real GDP growth, MRR, credit growth, NEER and M2 growth.

It employs a Structural VAR (SVAR) technique to detect structural monetary policy shock by employing Cholesky decomposition founded on recursive identification approach of Christiano, Eichenbaum and Evans (1999). Parameters of an ordering places policy, commodity prices and Russian GDP, are not only responsive to all shocks, but are not contemporaneously responsive by domestic policy; GDP and CPI are not contemporaneously responsive by MRR, the MRR is contemporaneously responsive by GDP and CPI; and credit and NEER are contemporaneously responsive by MRR. Sign restriction which is an important method of identification suggested by Uhlig (2005) and a narrative approach which uses the advantage of dates of CBU MPC decision is tested based on its strength. Forecast Error Variance Decomposition (FEVD) indicator is used to assess the percentage of forecast error variance that can be attributed to a structural shock at time 1, 4, 8, 12 and 20 quarters horizons.

Analysis and discussion of results.

The 2 lag 6-variable SVAR constructed according to the AIC selection satisfies the stability test and Ljung box autocorrelation residual test (at the 5-percent level). This is a negative response with a strong lag as indicated in this behavior of the impulse response of CPI inflation to one standard deviation contractionary shock of MRR (order of 150 basis points). After having controlled the commodity prices (this eliminates the first price puzzle), the inflation would be monotonically declining with its peak of -0.8 percentage points at 6-quarter horizon and will gradually reach the baseline.

The interest rate pass-through analysis gives sight to the asymmetric pass-through and incomplete pass-through. The coefficient of MRR to weighted average lending rate is 0.61 (s.e. 0.09), which means that a one hundred basis-point increase in MRR would be associated with a 61 basis-point increase in the lending rates over a period of four quarters. Pass through deposit rates are not as important but faster (0.42 in 4 quarters). In the aspect of the industry where directed lending has been significantly influenced by the state-owned banks (according to the estimated pass through of 0.78) the structural impediment has been created and not the structure itself of the general banking market.

The most significant and fast channel of transmission under Uzbekistan is the exchange rate channel. The contractionary MRR shock appreciates the shock by approximately 1.2 percent on impact and 2.1 percent on the 2-quarter peak which corresponds with dynamics of uncovered interest parity and moderate instances of overshooting as Dornbusch. Rather, a 1 percent NEER appreciation reduces the CPI inflation on average by 0.17 percentage points in the 4 quarters, and the greatest impact is felt within 4 quarters (between the 2nd and 3rd quarters). The estimate has been made on the high percentage of the imports in the consumption basket of the Uzbekistan (estimated at 25-30% of the CPI), particularly food.

The channel of exchange rate is very asymmetric (the transmission of depreciation being several times faster and more complete, 0.22-0.25 over two quarters) than the transmission of appreciation (0.13-0.17) and consistent with downward price rigidity and importer behavior in price making. It is projected that the effect of changes in the balance sheet, such as UZS appreciation in which the dollar borrowers will be benefited, will reduce the quantity of net disinflationary actions of dollarization by an estimate of 15-20 since the level of financial dollarization is high.

Credit channel results are available to support a priori assumptions on impaired transmission. The observed shift in total credit to contractionary MRR shock is statistically insignificant over the first four quarters with a very small negative response say -1.2 at the horizon at the 6-8 quarters. The disaggregated by type of bank will give a clear understanding of the source: there is statistically significant negative response -2.8% of the response by the

private bank credit at the 4-quarter horizon, but no statistically significant others and zero is statistically the same as state-owned bank credit. This confirms that the directed lending programs adopted by the banks operated under the state administration are practically insulated against the MRR signal. High NPLs limit the bank lending sub-channel also. A 3.5% of NPLs (and more likely when formally reported) is likely to be lower than the real one (IMF staff estimates show this to be 6-8% when restructured and linked lending is taken into account), this constrains the risk-taking of banks and constrains their new lending. The first indications of the post-2021 sub-sample consist of an early manifestation of an emergent balance sheet channel, namely, an increase of MRR by 100 basis points reduces the value of equity of listed firms by approximately 2.5 percent and restricts access to credit by highly leveraged firms. It has a good price channel of assets which does not exist in aggregate. They can be seen to lack statistically significant stock exchange market reaction to at any horizon to MRR shock as the index Tashkent expresses that market capitalization (less than 2 percent of GDP), concentrated state ownership, and low trading volumes are very low. The property market provides a partial answer where an increase in the average mortgage and lending rates by 100 basis points shows a correlation of the drop in the real estate price progress at 2-3% in 4 quarters, however, the state-controlled mortgage programs suppress the operation of the market channel. The expectations channel will be tested based on both CBU survey and the interest rate swap (IRS) market data which will be utilized in 2022. The 0.72 correlation of household inflation expectations by survey measurements to 12-month past inflation and only 0.31 correlation to the mentioned inflation target of the CBU indicates that more so the household inflation expectations are instilled adaptively. More consistency is exhibited by the professional forecasters to the CBU target path that refers to the presence of considerable information asymmetry between the financially literate agents and the general population. Of the alteration of MRR decided for a 1-year swap rate, 60-70 per cent of the alteration in the MRR is estimated and in the 50 basis-point unexpected tightening case, the yield on a 2-year government bond is estimated to be shifted by 35-40 basis points, but such shift is partial rather than complete, which is due to the partial credibility.

Table 2 shows the results of FEVD of CPI inflation. Monetary policy shocks have a fairly significant contribution of 12-quarter-ahead CPI inflation forecast error variance of approximately 18-22 percent - a positive and significant, but still partial contribution - indicating that much of the dynamics of inflation can be directly respondent to monetary policy. The exposure of Uzbekistan to external factors is 28-33 and exchange rates shocks are around 20-25 that is its exposure. Comparing these results with that of the peer economies of the same level of development of the IT sphere, the effects of the monetary policy of the country on the inflation in Uzbekistan are slightly more or less comparable to that of Kazakhstan (20-25%) and lower than that of Georgia (28-32%) and Armenia (30-35%), which can be attributed to the credit channel impediment.

Table 2.

CPI Inflation Decomposition of variance (Baseline SVAR)

Horizon (Qtrs)	MRR Shock	CPI Shock	GDP Shock	Credit Shock	NEER Shock	Commodity	Other
4	9.2%	52.1%	7.3%	2.1%	15.6%	9.4%	4.3%
8	15.7%	38.4%	8.9%	3.2%	18.9%	11.2%	3.7%
12	20.1%	29.8%	9.4%	4.1%	21.3%	11.8%	3.5%
20	21.8%	24.6%	9.1%	5.2%	22.7%	13.4%	3.2%

Note: results from baseline 6-variable SVAR with Cholesky identification. Bold values denote monetary policy shock contributions at key horizons.

The empirical findings make a unified set of policy recommendations that are organized in the form of four pillars. Firstly, the directed lending must be turnaround in order to revive the channel of credit. This tendency of the state-owned banks to direct credit with the help of the subsidies being less than the MRR implies that the parallel financial system undermines the ability of the CBU to stabilize the economy through the interest rate policy. In the short run, the government has to replace interest rate subsidies on a direct fiscal transfer so as to allow state banks to charge loans at market rates. Privatization by selectivity of the state-owned banks in a medium term will be impactful in that the banking sector will have acquired a more responsive and competitive market in response to the market.

Second, the method of extending the transmission of the monetary policy is by accelerating de-dollarization. Building a deep local government securities market having a liquid yield curve would provide a local-currency savings account to compete with USD deposits. Any savings made in the foreign currency would be more attractive to domestic bonds that indexed to inflation since they would offer anti-inflation protection without charging any currency risk.

Third, in order to improve the institutional structure of the CBU there must be additional institutional expansion in terms of analytical facility, legal autonomy and responsibility. The current forecasting system is highly reliant on technical support of IMF even though it has been updated. An annual accountability mechanism would improve the accountability part of IT such as through parliamentary hearing where the governor of the CBU will present the IT performance report.

Fourth, expression of monetary policies should be more enhanced in building the expectation channel. CBU communications is now looking retrogressively. Slowly, this hole would be directly occupied by introducing a dot plot-type interest rate path projection, and a financial literacy program founded on household inflation expectations would gradually result in a transition of the forward- and not backward-looking formation of expectations.

Finally, capital market- the conditions of the asset price channel- development should be prioritized by building the second government bond market, by establishing the prime dealer mandate and altering payments in the makes of the pension funds to establish the institutional investing constituencies in the corporate bonds. The fiscal-monetary coordination ought to be properly managed as well and proper accounting of the quasi-fiscal activity of the development banks ought to be factored in the setup of the fiscal anchors.

Conclusion and suggestions.

The paper has offered an empirical analysis of the transmission channels of monetary policy in an inflation targeting with the deployment of monetary policy via deployment of a new regime in Uzbekistan. The interest channel works but in a smaller extent: the pass-through effects of the principal refinancing rate to the lending rates are approximately 0.61 which is a disfiguring impact of the state bank directed lending. The most prompt moving and the biggest in effect channel is the exchange rate channel and an appreciation of the NEER by 1 percent by the conclusion of four quarters reduces inflation by approximately 0.17 percentage points. The credit channel per se is grossly impaired, state-owned bank credit, which contributes 70% of the system is not statistically significantly sensitive into changes in MRR. Channel of asset price is of an inconsequential factor but channel of expectations is partially operative among the financial markets participants but not to the households.

On the whole, the monetary policy shocks account 18-22% of 12-quarter ahead inflation, which places Uzbekistan in a stance of transmitting between low-income Central Asian counterparts and more financially advanced IT adopters within the territory such as Georgia and Armenia. Uzbekistan has already succeeded in creating the institutionalization of inflation targeting and the complete results of these new structural reforms will be the liberalization of directed lending, the de-dollarization, the capital markets, and the further institutionalization

of the CBU. It is estimated that the completion of full functioning IT regime will require 5-10 years of sustained reforms. The experience in the rest of the world, particularly the successful process of transition of Georgia toward IT, and the de-dollarization of Armenia, suggests that these reforms are possible and are also connected with significant positive implications on the macroeconomic stability in the long run.

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