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Understanding Inflation Dynamics in Afghanistan

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Understanding Inflation Dynamics in Afghanistan

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ABSTRACT: Over the past two decades, Afghanistan experienced three main periods of deflation, with the latest being the longest. This paper investigates the macroeconomic factors influencing inflation dynamics in the short and long run, considering both domestic and external factors. Utilizing quarterly data and employing Autoregressive Distributed Lag (ARDL) and Error Correction Model (ECM) methodologies, the paper finds that the exchange rate is the primary long-term price driver due to Afghanistan's reliance on imports and foreign aid, followed by money supply and international commodity prices. In the short run, inflation is persistent, and broad money have a significant impact on inflation compared to external factors.

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WORKING PAPERS

Understanding Inflation Dynamics in Afghanistan

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I. Introduction

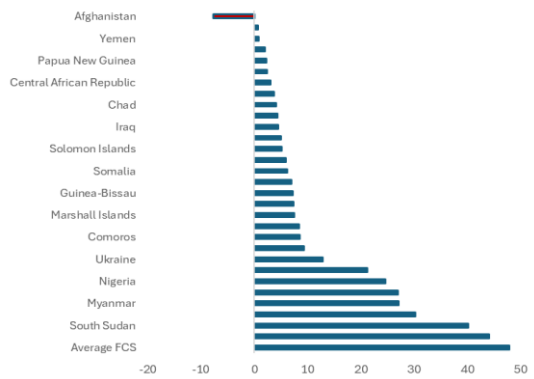
Afghanistan has faced deflation since April 2023 attributed to weak domestic demand, currency appreciation, and favorable international commodity prices.[1] This represents the third occurrence of deflation in the country, following similar episodes in 2009/10 and 2015 (Box 1). The first episode was primarily driven by falling international commodity prices, while the second resulted from weak domestic demand and declining food and fuel prices. The latest deflationary episode has been more prolonged compared to the previous instances.

Deflationary pressures can impede economic recovery by reducing consumption, constraining investment, and increasing real wages. As prices fall, consumers postpone purchases, diminishing demand and discouraging production. While deflation may temporarily boost real wages, the resultant increase in business costs can lead firms to delay investments, particularly if labor productivity remains stagnant. Additionally, fall in prices could lead businesses to lower costs by reducing wages and/or employment, further weakening of domestic demand. Deflation can result in a persistent downward spiral of prices and wages, further harming consumption, employment, and overall livelihood. In Afghanistan, where agriculture plays a critical role in the economy as a key sector for employment, deflation driven by falling food prices could adversely affect farmers' incomes unless offset by reductions in other living costs.

Fragile and conflict states (FCS), including Afghanistan, face significant challenges in achieving price stability due to their vulnerability to external shocks and weak monetary transmission mechanisms. The IMF (2018) finds that inflation in fragile low-income states was about 3.5 percentage points higher than in non-fragile counterparts, primarily attributable to greater susceptibility to external shocks and volatile domestic factors that diminish the effectiveness of monetary policy. The World Bank (2019) highlights that those low-income countries (LICs) experience higher inflation volatility compared to other emerging and developing economies, with core inflation particularly sensitive to external shocks, although domestic factors—such as debt levels, exchange rate regimes, current account openness, and central bank transparency—are crucial in moderating inflationary pressures. External shocks have also played a key role in inflation dynamics in Afghanistan during both periods of high inflation and deflation. Afghanistan experienced the most pronounced deflation among FCS (Figure 1).

Figure 1. CPI Inflation in FCS

(2023, Period Average)



Sources: WEO, IMF staff calculations.

This paper relates to several strands of the literature, which is relatively limited, on inflation drivers in Afghanistan. Mizra and Faryad (2018) utilize Ordinary Least Squares (OLS) to analyze the determinants of inflation, with the consumer price index (CPI) as the dependent variable, and currency in circulation (CIC) and the nominal USD/Afs exchange rate as independent variables. Their findings indicate that short-term domestic prices are influenced by CIC and exchange rate fluctuations, while long-term inflation is driven primarily by external shocks, such as international commodity prices. The IMF (2019) also employs OLS to identify the drivers of inflation, concluding

[1] As of December 2024, Afghanistan has experienced deflation since April 2023 till the latest data received in November 2024.

that current inflation is affected by past price levels, the exchange rate, international commodity prices, and temperature, while the money supply and credit do not significantly explain price variations. Aziz (2019) examines the relationship between monetary aggregates and inflation, finding that controlling narrow and broad money growth has limited impact on inflation but is more effective for targeting the exchange rate. The World Bank (2024) highlights that inflation during 2023-2024 is heavily influenced by international food and energy prices due to the country's reliance on imports for essential goods.

This paper investigates the macroeconomic determinants of inflation dynamics in Afghanistan, filling a gap in the literature arising from limited data and research on the topic. Using quarterly data spanning from Q4 2006 to Q4 2023, it analyzes both domestic and international factors influencing inflation in the short and long term. Domestic factors include money supply and temperature changes (deviation from normal temperature levels), while external factors encompass the international commodity price index, the exchange rate, and foreign grants.[2] The paper utilizes Autoregressive Distributed Lag (ARDL) and Error Correction Model (ECM) methodologies to measure the impact of these factors on inflation over different time horizons. The findings indicate that, in the long run, the exchange rate is the predominant driver of prices, reflecting Afghanistan's reliance on imports and aid, followed by money supply and international commodity prices. In contrast, inflation is persistent in the short run and broad money has a more significant impact compared to the exchange rate. Furthermore, the analysis shows a rapid adjustment speed to deviations from long-run equilibrium, except during the latest prolonged deflation that started in April 2023 due to the regime change, followed by a substantial decline in aid, and worsening humanitarian conditions.

The rest of the paper is organized as follows. Section II reviews inflation trends and relevant macroeconomic determinants over the past two decades. Section III presents empirical models and estimates of inflation determinants. Section IV concludes.

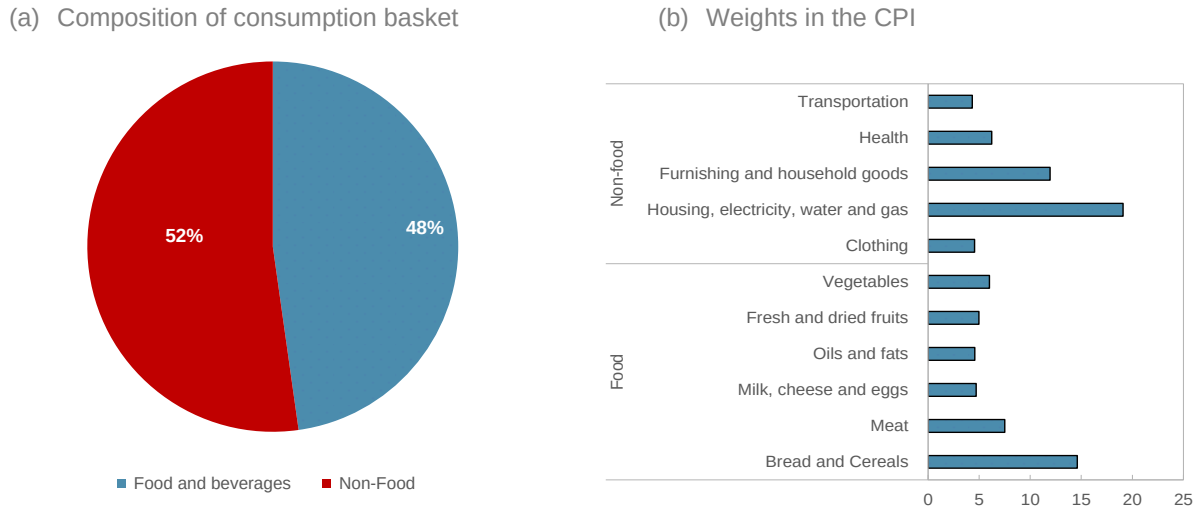
II. Stylized Facts

A. Consumption Basket

The CPI in Afghanistan is almost evenly split between food and non-food items. The largest categories are housing and utilities (19 percent), bread and cereal (14.6 percent) and furniture and household goods (11.9 percent). Among food items, the top three are bread and cereal (14.6 percent), meat (7.5 percent), and vegetables (6.0 percent). For non-food items, the leading categories are housing and utilitities (19 percent), furniture and household goods (12.0 percent) and health spending (6.3 percent).

[2] Due to data constraints (i.e., GDP data are released on annual basis), this paper cannot estimate the output gap, which is a key driver of prices and a proxy for business cycles and domestic demand.

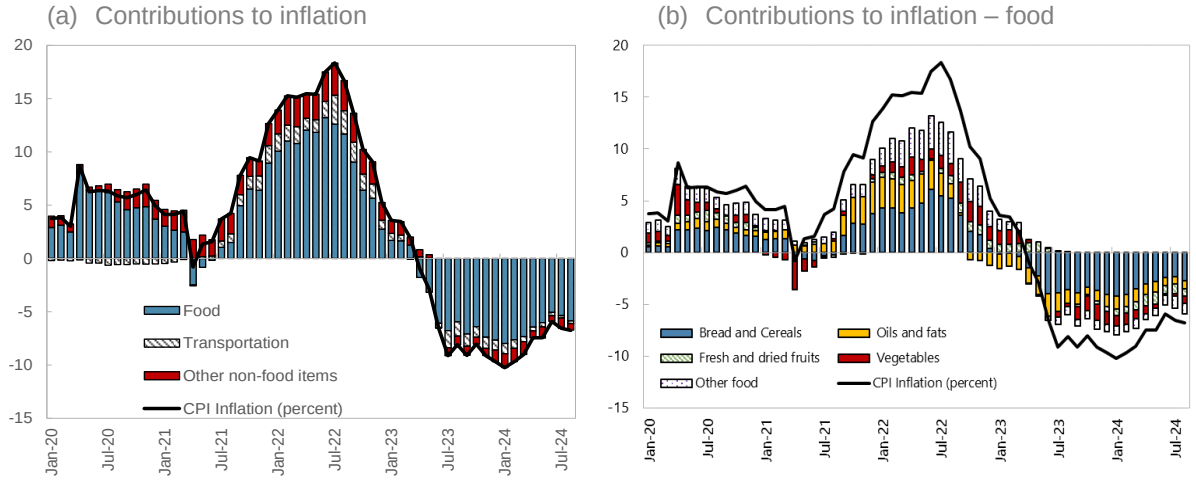
Figure 2. Composition and Weights of Consumption Basket
(Percent)



Sources: NSIA, and IMF staff calcuations.

Inflation in Afghanistan is predominantly driven by food items, with bread and cereal being the largest contributor to inflation during both peaks or troughs (Figure 3). Between June 2021 and July 2022, as inflation accelerated, food items had the most significant impact on prices. In July 2022, inflation peaked 18.3 percent, with food items contributing 12.3 percentage points (5.5 percentage points from bread and cereal). Similarly, during the latest deflationary episode that started in April 2023, these items contiuned to be the primary influencers. By January 2024, deflation reached 10.2 percent, with food items contributing almost 8.0 percentage points (4.2 percentage points from bread and cereal).

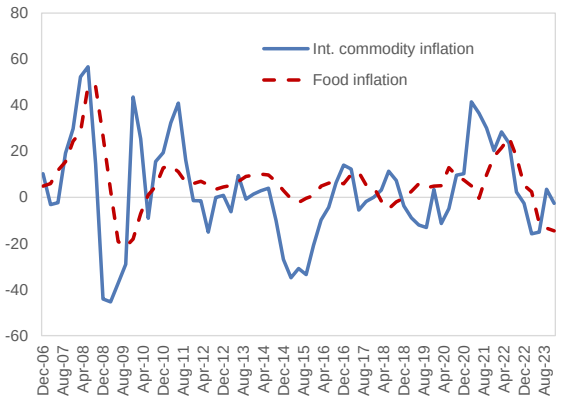
Figure 3. Contributions to inflation
(Percent, y-o-y)



Sources: NSIA, and IMF staff calculations.

Food inflation in Afghanistan is affected by various domestic and external factors. The link between domestic food prices and international commodity prices (weighted by Afghanistan's imports) has generally been weak since 2006, with notable exceptions during 2007-2008 and between August 2021 and mid 2023. (Figure 4). This weak link suggests that food inflation dynamics in Afghanistan are also impacted by other domestic factors such as climate-related events (e.g., droughts), economic conditions, and other external factors. For instance, the decline in food prices since May 2023 is attributed to improved domestic wheat cultivation, the retreat of drought conditions, a decline in international wheat prices, an appreciation of the exchange rate, and weak domestic demand due to the ongoing humanitarian crisis.

Figure 4. Food inflation and International Commodity Prices
(Annual Percentage Change)



Sources: NSIA, and IMF calculations.

Box 1. Unpacking Three Deflationary Episodes

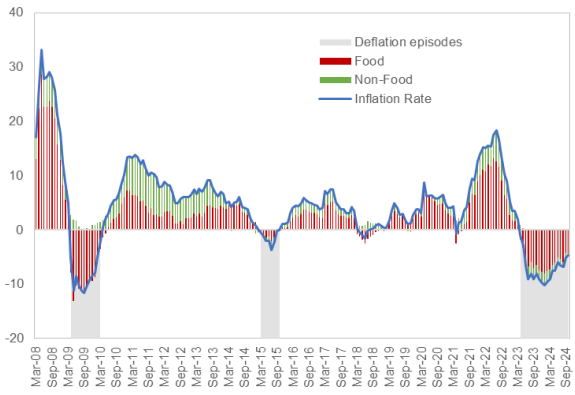
Since 2009, Afghanistan has experienced three primary periods of deflation (Box Figure 1). Each period marked by falling food prices, although specific factors for each period also played a role in these deflationary trends.

- **April 2009 to March 2010.** The first deflation episode was the sharpest, driven by falling international commodity prices, resulting in an average inflation rate of nearly -10.0 percent (IMF, 2010). Following this period, inflation rebounded due to the increase in international commodity prices and strong GDP growth rates of 20.6 percent in 2009 and 8.4 percent in 2010.

- **March to September 2015.** The second period of deflation was short lived, averaging -1.7 percent. This was driven by weak domestic demand, as GDP growth decelerated to 1.0 percent in 2015 from 2.4 percent in 2014, and by declining world food and fuel prices (IMF, 2015).

- **April 2023 to October 2024.** The latest deflation period averaged -7.1 percent in headline inflation and -1.4 percent in core inflation, following a cumulative GDP contraction of nearly 27.0 percent in 2021 and 2022. Despite a modest recovery of 2.3 percent growth in 2023, deflationary pressure persists with October 2024 annual headline inflation registering -4.6 percent. Compared to other FCS and LIC countries, Afghanistan experienced the most significant price decline. Key factors contributing to this deflation episode are the ongoing humanitarian crisis, the appreciation of the Afghani, and decreases in international commodity prices.

Box 1 Figure 1. Contributions of food and non-food items to inflation
(Percent, y-o-y)

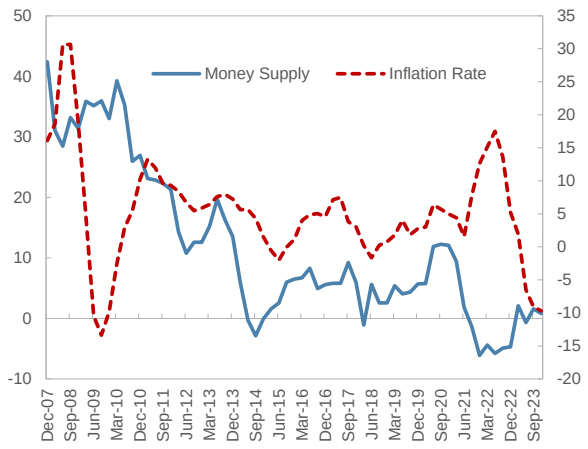


Sources: NSIA, and IMF staff calculations.

B. Domestic Drivers of Inflation

Money supply. In the absence of an inflation targeting framework anchored on policy rates, the Da Afghanistan Bank (DAB) primarily utilizes monetary aggregates to influence economic activity and inflation. DAB's monetary targets include ceilings on the growth of reserve money and CIC (base money components). Liquidity management tools comprise foreign currency auctions and the sale of capital notes. As such, money supply is DAB's de facto monetary anchor. Afghanistan's money supply is primarily backed by net foreign assets linked to international grants, showing a strong co-movement with inflation (Figure 5).[3] Following August 2021, the money supply declined sharply due to the reduced foreign aid, difficulty or inability to print money, weak credit creation from low economic activity, and limited correspondent banking relations, resulting in deflationary pressures.

Figure 5. Money supply and inflation
(Annual Percentage Change)



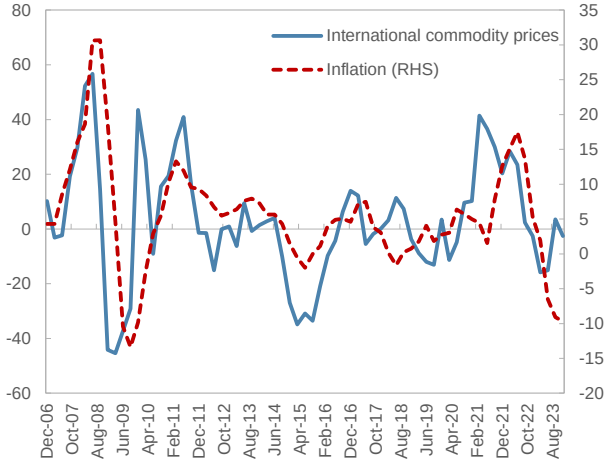
Sources: DAB, NSIA, and IMF staff calculations.

Temperature. Change in temperature is a proxy for weather shocks affecting agriculture, potentially leading to food shortages and increases in prices. The variable used is the deviation in degrees from the normal temperature for that time of year. Dummy variables for times of droughts are also included to capture changes in weather conditions on prices.

C. External Drivers of Inflation

International commodity prices. Afghanistan relies heavily on imports, averaging around 35 percent of GDP over the past five years. The inflation rate is highly sensitive to changes in international commodity prices, weighted by the country's import basket (Figure 6). Historical data shows that inflation followed international commodity prices during the deflationary episodes of 2009/10 and 2015. However, since mid-2023, data shows a divergence between domestic inflation and international commodity prices. This suggest that additional factors are influencing the latest deflation, most notably the ongoing humanitarian crisis and the appreciation of the Afghani.

Figure 6. International commodity prices and Inflation
(Annual Percentage Change)

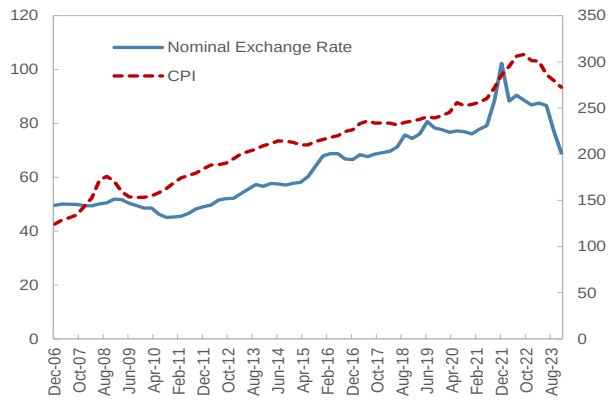


Sources: NSIA, and IMF staff calculations.

[3] The paper uses the annual growth in M2.

Exchange Rate. The stated objectives of DAB are to maintain price stability and exchange rate stability. The DAB asserts that the exchange rate is primary tool to achieve price stability.[4] Historically, periods of currency appreciation have been closely associated with lower inflation and vice versa (Figure 7), since Afghanistan is a small economy and relies on foreign aid and imports. Recently, the appreciation in the exchange rate, despite the current account deficit, is partially attributed to UN cash shipments, unrecorded inflows through non-banking channels, restriction on capital outflows, and enforcement of using local currency in domestic transactions (Box 2).

Figure 7. Nominal exchange rate and CPI
(Index)

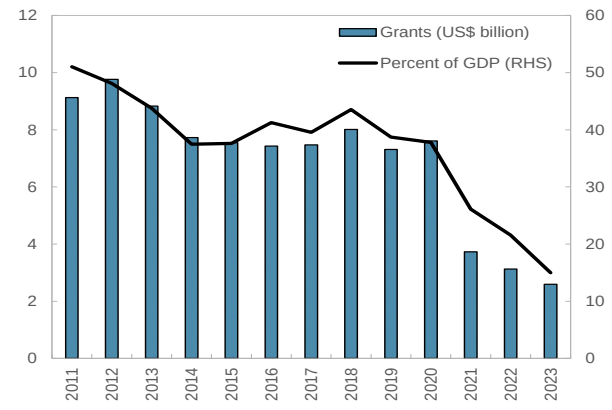


Sources: DAB, NSIA, and IMF staff calculations.

Dollarization and Exchange Rate Pass-Through. The pass-through of exchange rate on inflation is more pronounced in dollarized economies (Phiakeo, K 2017; Luis 2009; Sadeghi 2015, and Ha 2019). Several factors contribute to this effect: goods and services linked to US dollar, heavy reliance on imported goods and the difficulty of managing monetary policy (money supply in case of Afghanistan). Despite data limitations, evidence shows Afghanistan's economy is highly dollarized (World Bank 2024, Muzaffari, et. al 2019, and Ahmady 2023). In FY 2023/24, foreign currency deposits comprised nearly 60 percent of total deposits, while deposits in Afghani were slightly above 40 percent of total deposits. Additionally, over 50 percent of banking sector assets were denominated in foreign currency in 2023. Dollarization has recently declined due to enforcement of use of local currency in domestic transactions, which partially contributed to the appreciation of the Afghani.

Grants. Afghanistan relies heavily on foreign aid. Prior to the regime change in August 2021, Afghanistan received significant on-budget and off-budget grants, amounting to about 40 percent of GDP (Figure 8). On-budget grants funded government expenditure including development spending, while off-budget grants supported critical sectors in the economy, particularly the service sector. Furthermore, grants and other in-kind assistance play an important role in availing food and other necessity items into Afghanistan, contributing to price stability. Grants have also alleviated pressures on the exchange rate through inflows of foreign currency, and thereby stabilizing the exchange rate and supporting price stability. On contrary, aid inflow could contribute to increasing demand and put pressures on inflation.

Figure 8. On- and Off-Budget Grants
(US$ Billion and Percent of GDP)



Sources: Afghan authorities, and IMF staff calculations.

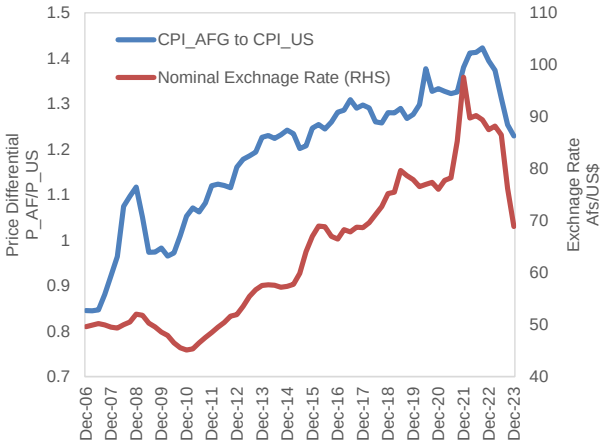
[4] Da Afghanistan Bank. Monetary Policy Formulation and Execution | Da Afghanistan Bank

Box. 2. Exchange Rate and Inflation Dynamics

Afghanistan's heavy reliance on imports and external grants makes it vulnerable to exchange rate fluctuations, which directly affect the price of imported commodities and impact the CPI. Following the regime change in August 2021 and the subsequent freezing of foreign assets, Afghanistan's low level of usable reserves cannot cushion against exchange rate shocks. Additionally, the movements in nominal exchange rate are strongly correlated with price level differential between prices in Afghanistan and the U.S., supporting the purchasing power parity hypothesis (Box Figure 1).

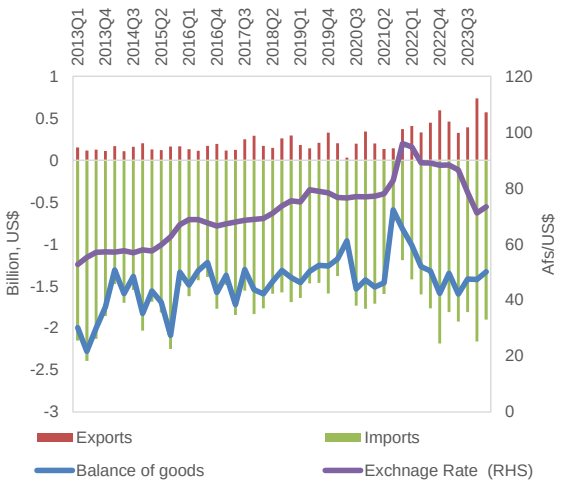
While Afghanistan has experienced a widening of the official current account deficit, the exchange rate appreciated from 2022 to 2024 (Box Figure 2). The appreciation in the Afghani currency can be attributed to several factors. The UN's cash shipments have increased foreign currency supply, amounting to about US$5.0 billion from December 2022 to December 2024. The de facto authorities have also enforced the use of domestic currency for transactions and set limits on deposit withdrawals. Additionally, unrecorded inflows of foreign currency through non-bank institution such as Money Service Providers and Hawala—due to the rupture of corresponding banking relationships—have led to foreign currency availability in the local markets. Lastly, a decrease in money supply have reduced local currency against foreign currency.

Box 2 Figure 1: Price differential and nominal exchange rate



Box 2 Figure 2. Balance of goods and exchange rate

(US$ Billion, unless otherwise indicated)



Sources: DAB, NSIA, and IMF staff calculations.

III. Empirical Analysis

Methodology. This paper uses Autoregressive Distributed Lag Model (ARDL) to investigate both the short and long run determinants of inflation in Afghanistan. The ADRL model is structured as follows:

$$\mathbf{CPI_t} = \alpha_i + \sum_{i=1}^{p} \delta_i CPI_{t-i} + \sum_{i=0}^{q} \beta_i X_{t-i} + \sum_{i=0}^{q} \beta_i Z_{t-i} + \gamma_i D1_{it} + \theta_i D2_{it} + \varepsilon_{it}$$

where;

- CPI is the dependent variable.
- X is a vector of independent domestic variables: broad money (M2) and change in temperature.
- Z is a vector of independent international variables: international commodity prices weighted by imports, nominal exchange rate, and external grants.
- Dummy variables: droughts (D1) and change in regime in August 2021(D2)[5].
- As a robustness check, the paper examines three models:
- Model 1 includes as independent variables the lags of CPI, M2, nominal exchange rate, an index of international commodity prices weighted by imports, grants, and change in temperature.
- Model 2 excludes M2, to avoid potential multicollinearity with exchange rate (see table A5 for the correlation matrix).

Data. The analysis utilizes quarterly data, spanning from 2006:Q4 to 2023:Q4, with all variables log-transformed (except change in temperature variable which is used in levels) and seasonally adjusted.[6] The Augmented Dicky-Fuller (ADF) test confirmed that all variables are either stationary at level I(0) or integrated of order 1 I(1) (Annex I, Table A1). Optimal lags for each of the variables, including CPI, were determined from testing 12500 models using the Akaike information criterion (AIC). The Bound test (Annex I, Table A2) implies four cointegrating variables, allowing for the Error Correction Model (ECM) to estimate long run equilibrium. The Breusch-Godfrey Serial Correlation LM Test showed no serial correlation in the ARDL model. The Breusch-Pagan-Godfrey Heteroskedasticity Test confirmed that the errors are homoscedastic; and the Jarque-Bera test showed they are normally distributed. Stability diagnostic test (recursive stability test) showed the model parameters are stable. Additionally, potential endogeneity of the independent variables (M2, exchange rate and grants) with the dependent variable (CPI) is less of a concern in ARDL, which is not affected by autocorrelation (Bellemare 2016, Murthy 2016, Zermeno 2014).

Estimation results. The ARDL models show that prices from previous periods, money supply, exchange rate, international commodity prices (weighted by imports shares), and grants significantly influence current level of prices (Table 1).[7] These estimates exhibit consistency across the different models.

- Inflation is persistent, where the prices from previous quarters exert the most substantial impact on the prices in the current quarter.
- Changes in money supply have a pronounced effect on price levels both contemporaneously and with lags. Specifically, an increase in M2 demonstrates a positive and statistically significant contemporaneous relationship with price levels. Although past changes in M2 continue to affect price

[5] A Chow test showed a structural break in Q3 2021 when Taliban took over. A dummy is introduced to control of that break.
[6] This paper only includes data up to the end of 2023 because not all variables have up-to-date data for 2024.
[7] Full results are available in Annex I, Tables A3 to A5.

levels, their influence is inconsistent. Price levels are positively associated with M2 changes from four quarters earlier, but negatively associated with M2 changes from the preceding quarters.

- Nominal exchange rate shows a positive and statistically significant relationship with price levels. A depreciation in the exchange rate is associated with an increase in prices.
- The impact of the international commodity prices (weighted by imports) shows a positive and statistically significant relationship with prices.
- Grants and change in temperature play a minimal role in explaining changes in prices.

Table 1. Autoregressive Distributive Lag Models

ARDL Model	Model 1	Model 2
CPI (-1)	0.91***	1.17***
CPI (-3)		-0.38**
CPI (-4)		0.18*
M2	0.22***	
M2 (-1)	-0.29**	
M2 (-4)	0.23**	
Exchange rate		0.13**
Exchange rate (-2)	0.17***	0.12**
Int. Commodity Prices	0.05***	0.07***
Int. Commodity Prices (-2)		
Change in temperature (-2)		0.0016***
Grants	-0.03**	
Grants (-1)		
Grants (-2)	0.03*	0.04**
C		-0.52***
R-squared	0.99	0.99
Adjusted R-squared	0.99	0.99
Durbin-Watson stat	2.05	2.11

*** p-value < 1%, ** p-value < 5%, p-value <10%
Note: insignificant variables were omitted from the table and reported in table X (Annex X).

In the long run, exchange rate, broad money, and international commodity prices are strong determinants of price levels (Table 2). The exchange rate is the strongest driver of inflation; a 1 percent depreciation (appreciation)

would increase (decrease) prices by about 0.5 percent (Model 1), which could partially be explained by the heavy reliance on external trade, grants, and high level of dollarization. While inflow of aid supports domestic demand and prices, the heavy dependance on imports, foreign aid and dollarization makes inflation more responsive to exchange rate movements. Money supply and international commodity prices also affect price levels (Model 1). A 1 percent change in M2 is associated with 0.2 percent change in prices, while a 1 percent change in international prices is associated with 0.12 percent change in prices. Grants and change in temperature do not impact prices.[8] Models 2 confirms that the exchange rate is the main driver of inflation, with a 1 percent change in the exchange rate corresponding to changes of 0.9 percent and 0.65 percent in the CPI, respectively. In model 2, where M2 is excluded, the impact of the exchange rate and international commodity prices on the CPI are stronger compared to model 1. Additionally, in model 2, grants show a positive and statistically significant relationship with prices, which can be attributed the high level of dollarization in Afghanistan.

Table 2. Long-Run Relationships

(Cointegration coefficients)

	Model 1	Model 2
Log M2	0.19***	
Log Exchange rate + Log International commodity Prices	0.49***	0.92***
	0.12***	0.46***
Log Grants		0.24***

*** p-value < 1%, ** p-value < 5%, p-value <10%

Note: insignificant variables were omitted from the table.

In the short run, Inflation is persistent, with current CPI level strongly influenced by previous levels. Changes in money supply significantly affect inflation in the short run, followed by exchange rate changes. International commodity prices do not impact inflation, indicating higher commodity prices affect the Afghani economy through nominal exchange rate channel. Grants and temperature changes, while significant, both have a minimal impact on inflation.

The speed of adjustment of deviation is notably swift, particularly if M2 is introduced in the model. Deviations from the long run equilibrium are corrected quickly, where 44 percent of the deviation are corrected in a single quarter (Model 1), while only 15 percent of deviations are corrected in one quarter under models 2.

[8] Grants could be insignificant because M2 is present in the model. When the model is run without M2 grants, it turns to be significant but with a small coefficient.

Table 3. Error Correction Models

	Model 1	Model 2
Speed of Adjustment	**-0.44*** **	**-0.15*** **
D Log CPI (-1)	0.35***	0.33***
D Log CPI (-2)	0.21***	0.20**
D Log CPI (-3)		-0.18**
D Log M2	0.22***	
D Log M2 (-1)	-0.14***	
D Log M2 (-2)	-0.15***	
D Log M2 (-3)	-0.23***	
D Log Ex. Rate +	0.08**	0.13***
D Log Ex. Rate + (-1)	-0.17***	-0.12***
D Log Ex. Rate + (-2)		
D Log Int. comm. Prices		
D Log Int. comm. Prices (-1)		
D Log Grants	-0.03***	
D Log Grants (-1)	-0.03***	-0.04***
D change in temp		0.001***
D change in temp (-1)	-0.001***	-0.001***
C	0.14***	0.52***

***p-value < 1%, ** p-value < 5%, p-value <10%
Note: insignificant variables were omitted from the table and reported in table X (Annex X).

IV. Conclusion

Afghanistan has faced three deflation periods in the past two decades, with the latest episode (2023-24) being the most protracted. Inflation in Afghanistan is driven by food prices due to its underdeveloped economy and prevalent poverty. This paper investigates the macroeconomic determinants, both domestic and external, that impact inflation. It corroborates the findings of previous studies, highlighting that inflation from previous periods, exchange rate, international commodity prices are key determinants of inflation in Afghanistan. In particular, as a small fragile, low-income economy, external factors exert a substantial influence on domestic prices, where the exchange rate, money supply, and international commodity prices have positive relationships with prices both in the short and long run. However, in the short run, inflation is persistent, and money supply has a more pronounced impact on price levels compared to external factors. Future research could expand the analysis, when data are available, by incorporating additional determinants such as the output gap, fiscal indicators, and more comprehensive current account data. Examining the monetary transmission mechanism would provide insights into the effectiveness of monetary policy.

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Annex: Tests and Full Regression Results

Table A1 - Unit Root Test - Augmented Dickey-Fuller

Variables	Levels		1st Difference	
	t-statistic	Prob	t-statistic	Prob
CPI	-1.56	0.4	-3.99	0.00
M2	-3.29	0.01		
Nominal Exchange rate	-1.18	0.67	-7.36	0.00
Int. Commodity Prices	-2.26	0.18	-6.57	0.00
Change in Temperature	-7.21	0.00		
Grants	-1.25	0.64	-11.13	0.00

Table A2- Bound Test

Null hypothesis:	No levels relationship
Number of cointegrating variables:	5
Sample size:	65

	10%		5%		1%	
Sample Size	I(0)	I(1)	I(0)	I(1)	I(0)	I(1)
			F-Statistic			
60	2.39	3.57	2.82	4.10	3.78	5.34
65	2.40	3.54	2.84	4.09	3.78	5.30
Asymptotic	2.26	3.35	2.62	3.79	3.41	4.68
			t-Statistic			
Asymptotic	-2.57	-3.86	-2.86	-4.19	-3.43	-4.79

* I(0) and I(1) are respectively the stationary and non-stationary bounds.

Table A3 - ARDL Regression Results
Model 1 ARDL (4,4,2,0,2,2)

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
CPI (-1)	0.91	0.13	6.84	0.00
CPI (-2)	-0.14	0.19	-0.72	0.48
CPI (-3)	-0.07	0.18	-0.40	0.69
CPI (-4)	-0.15	0.12	-1.25	0.22
M2	0.23	0.08	2.70	0.01
M2 (-1)	-0.29	0.11	-2.62	0.01
M2 (-2)	-0.01	0.12	-0.09	0.93
M2 (-3)	-0.07	0.12	-0.63	0.53
M2 (-4)	0.23	0.10	2.46	0.02
Exchange rate	0.08	0.05	1.55	0.13
Exchange rate (-1)	-0.04	0.07	-0.53	0.60
Exchange rate (-2)	0.17	0.05	3.41	0.00
Int. Commodity Prices	0.06	0.01	4.19	0.00
Change in Temperature	0.00	0.00	0.25	0.80
Change in Temperature (-1)	0.00	0.00	-0.98	0.33
Change in Temperature (-2)	0.00	0.00	1.48	0.14
Grants	-0.04	0.01	-2.45	0.02
Grants (-1)	0.00	0.02	0.24	0.81
Grants (-2)	0.03	0.02	1.97	0.06
Drought	0.00	0.01	0.28	0.78
Taliban T.O.	0.01	0.01	0.84	0.40
C	0.14	0.23	0.64	0.53

R-squared	0.99	Mean dependent var	5.37
Adjusted R-squared	0.99	S.D. dependent var	0.20
S.E. of regression	0.01	Akaike info criterion	-5.64
Sum squared resid	0.01	Schwarz criterion	-4.90
Log likelihood	205.18	Hannan-Quinn criteria.	-5.35
F-statistic	770.94	Durbin-Watson stat	2.06

Table A4 - ARDL Regression Results
Model 2 ARDL (4,2,0,2,2)

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
CPI (-1)	1.18	0.12	10.12	0.00
CPI (-2)	-0.13	0.19	-0.67	0.51
CPI (-3)	-0.39	0.19	-2.09	0.04
CPI (-4)	0.19	0.10	1.79	0.08
Exchange rate	0.14	0.06	2.26	0.03
Exchange rate (-1)	-0.12	0.08	-1.37	0.18
Exchange rate (-2)	0.12	0.06	2.12	0.04
Int. Commodity Prices	0.07	0.01	4.90	0.00
Change in Temperature	0.00	0.00	1.66	0.10
Change in Temperature (-1)	0.00	0.00	-0.60	0.55
Change in Temperature (-2)	0.00	0.00	2.01	0.05
Grants	0.00	0.02	-0.28	0.78
Grants (-1)	0.00	0.02	0.00	1.00
Grants (-2)	0.04	0.02	2.65	0.01
Drought	0.00	0.01	-0.68	0.50
Taliban T.O.	0.01	0.02	0.71	0.48
C	-0.52	0.16	-3.29	0.00

R-squared	0.99	Mean dependent var	5.37
Adjusted R-squared	0.99	S.D. dependent var	0.20
S.E. of regression	0.02	Akaike info criterion	-5.30
Sum squared resid	0.01	Schwarz criterion	-4.73
Log likelihood	189.15	Hannan-Quinn criteria.	-5.07
F-statistic	688.71	Durbin-Watson stat	2.11

Table A5 – Correlation Matrix

	Exchange Rate	International Commodity Prices	M2	Grants	Temperature Change
Exchange Rate	1.00	-0.38	0.85	0.02	0.17
International Commodity Prices	-0.38	1.00	-0.38	-0.43	-0.12
M2	0.85	-0.38	1.00	0.30	0.15
Grants	0.02	-0.43	0.30	1.00	-0.27
Temperature Change	0.17	-0.12	0.15	-0.27	1.00

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