



EGYPT: ECONOMIC DEVELOPMENT AND POLICIES CONFERENCE

November 7-9, 2024

Inflation Targeting and Anchoring of Inflation Expectations – Trust Me

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To cite this presentation:

Ragab, A. (2024, November). Inflation Targeting and Anchoring of Inflation
Expectations – Trust Me [PowerPoint slides].

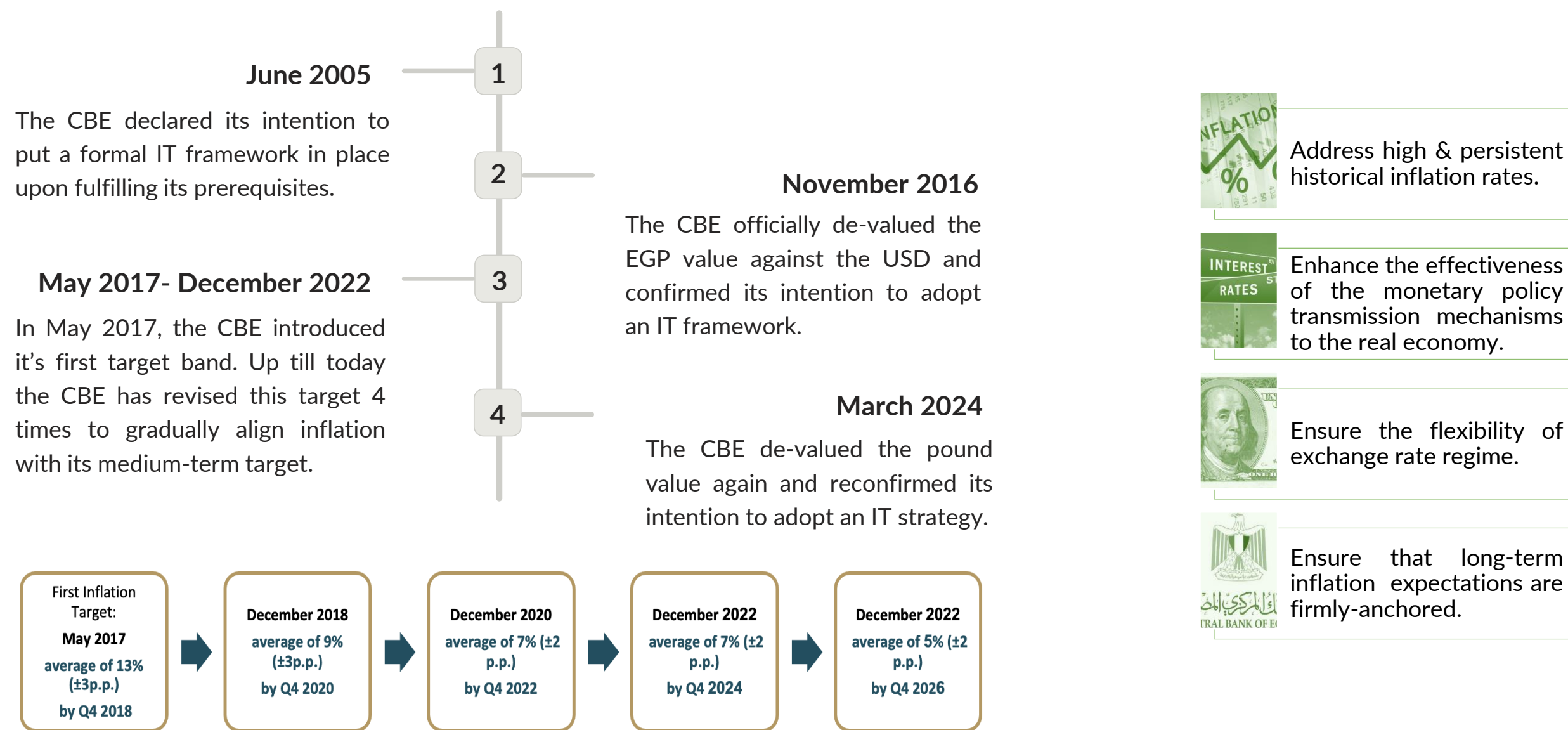
Egypt: Economic Development & Policies

Inflation Targeting and Anchoring of Inflation Expectations - Trust Me

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Cairo University



Inflation Targeting: Motivation and Timeline



<https://www.cbe.org.eg/en/monetary-policy/inflation-target>

IT Prerequisites and Expectations Anchoring



The success of IT strategy requires satisfying certain prerequisites:

Economic, **Institutional,**
and **Technical.**

In this paper we argue that if long-term inflation expectation is not firmly anchored, it might limit the CBE's capacity to fulfill these prerequisites.

Inflation Persistence

If inflation expectations are de-anchored, it can amplify inflation persistence, causing price pressures to endure longer and causing inflation deviate from target.

Transmission Mechanisms

Unanchored expectations reduce interest rate effectiveness as people and businesses may not adjust their behavior to rate changes, limiting CBE's control over inflation.

Exchange Rate and Fear of Floating

Unanchored expectations can destabilize foreign ER markets by increasing volatility, as market participants lose confidence in the CBE's ability to reach target and maintain currency stability. Persistent ER interventions may cast doubts on the CBE's commitment to meeting its target.

Fiscal Dominance

Unanchored expectations can exacerbate FD by making the CBE more hesitant to raise interest rates, as doing so would increase public debt servicing costs, further limiting its ability to control inflation.

De Facto Independence

Expectations de-anchoring can worsen de facto independence by undermining the CBE's credibility, making it harder to act independently to control inflation despite de jure independence.

Evaluation Measures of Expectations Anchoring



The extent to which inflation expectations remain anchored, they are aligned with the CBE's target, or turn de-anchored, they have deviated from the target, depends on the efficacy of the CBE in managing and guiding the expectations of market participants regarding future inflation.



Empirical literature uses two primary approaches to evaluate the degree of inflation expectations' anchoring or de-anchoring: survey-based measures and market-based measures.

Survey-Based Approach



Experts or households are regularly surveyed about their expectations on future inflation.



Provides a direct method for assessing the impact of shocks on long-term expectations.



Inflation expectations are collected at a low frequency, monthly at best.

Market-Based Approach



Using market data from inflation-indexed bonds or inflation swaps to deduce inflation expectations of the market participants.

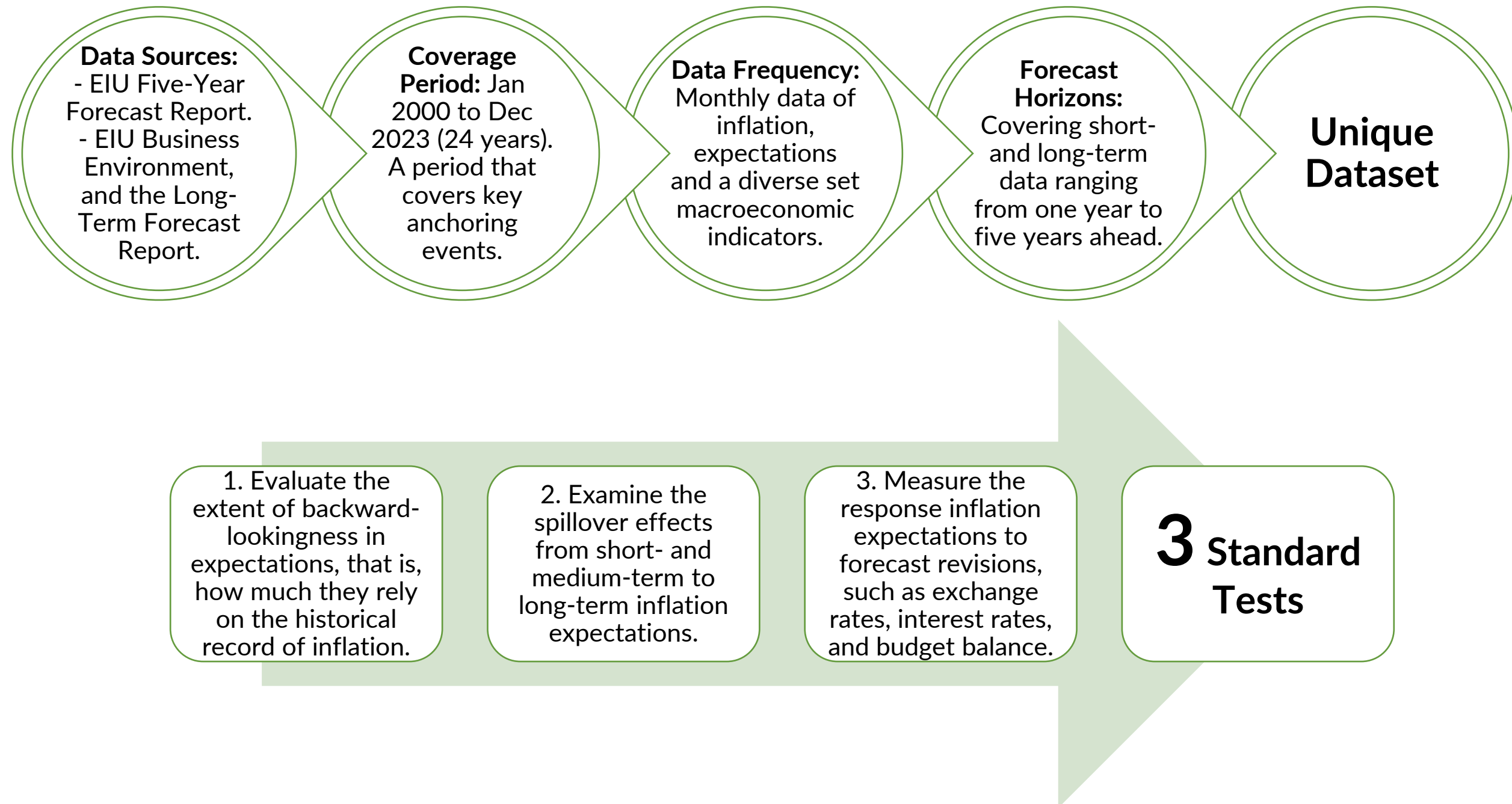


Provides a method for assessing the impact of economic shocks on long-term expectations.



Inflation expectations may be distorted by liquidity and risk premia.

Degree of Inflation Expectations Anchoring: Data & Tests



I) Are Inflation Expectations Backward-Looking?

When firmly anchored, inflation expectations, particularly those of the long term, should not respond to the short-term developments of inflation rate. Instead, expectations should be anchored to the announced long-term target.

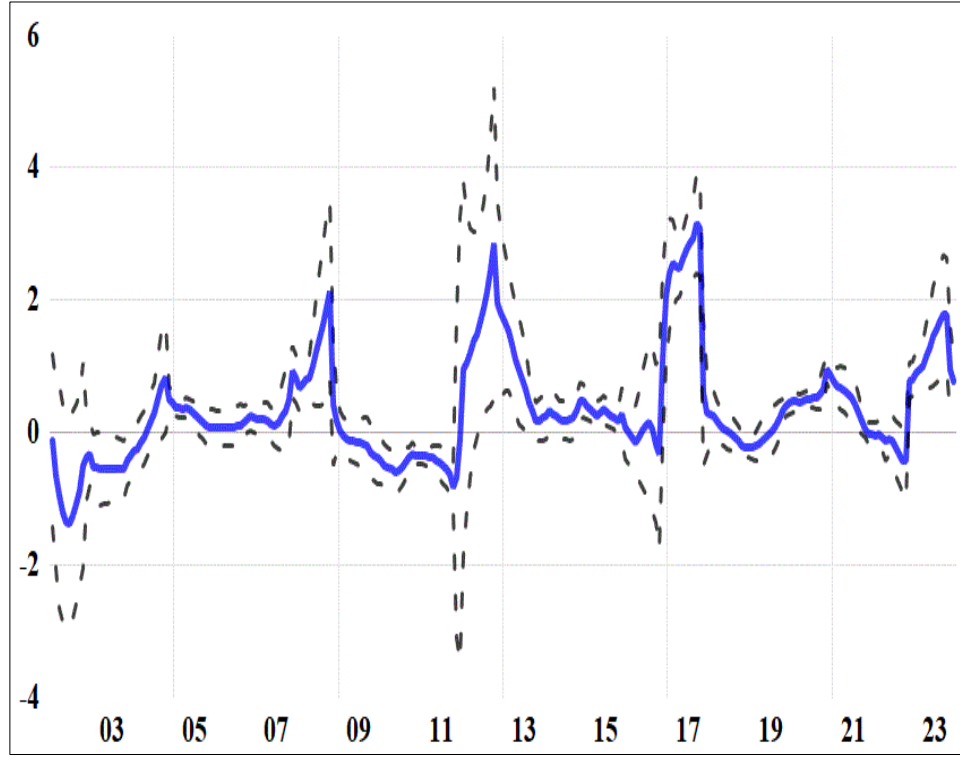
$$\pi_{t,t+n}^e = \alpha + \beta \pi_{t-1} + \varepsilon_t \dots\dots\dots \text{Eq. 1}$$

The model estimation results show that the parameter β , which determines the degree of expectations backward-lookingness, is statistically significant across all time horizons. The longer-term expectations are, however, relatively more well-anchored.

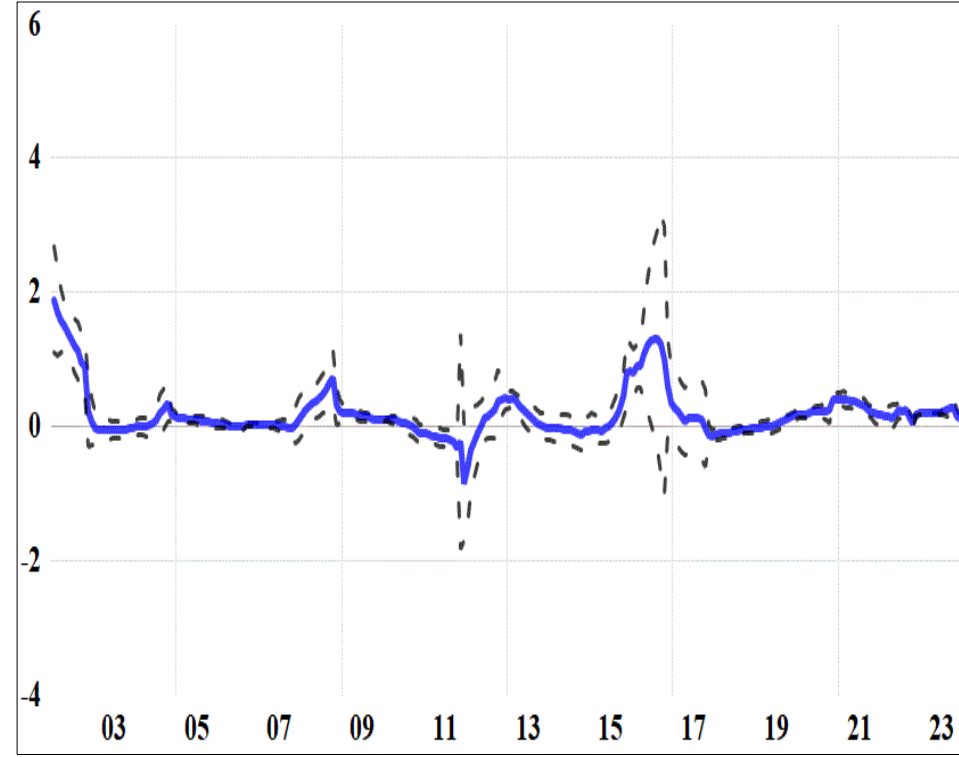
Assessing the anchoring status of inflation expectations over such an extended period may pose a challenge due to potential variations in the expectation formation process influenced by changes in the macroeconomic policy setup.

Therefore, Eq. 1 will be re-estimated using rolling regressions to evaluate model parameters stability, especially β , over time. Put differently, estimate whether the degree of inflation expectations backward-lookingness vary overtime.

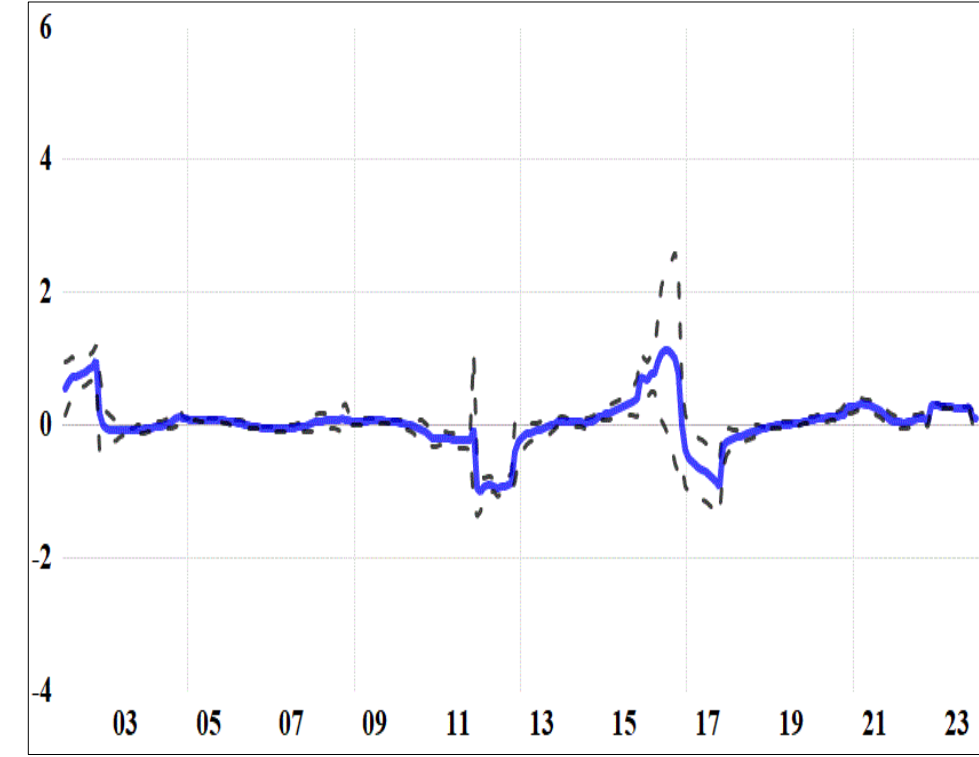
a) Rolling $\hat{\beta}$ Estimates of $\hat{\pi}_{t,t+1}^e = \hat{\alpha} + \hat{\beta} \pi_{t-1}$



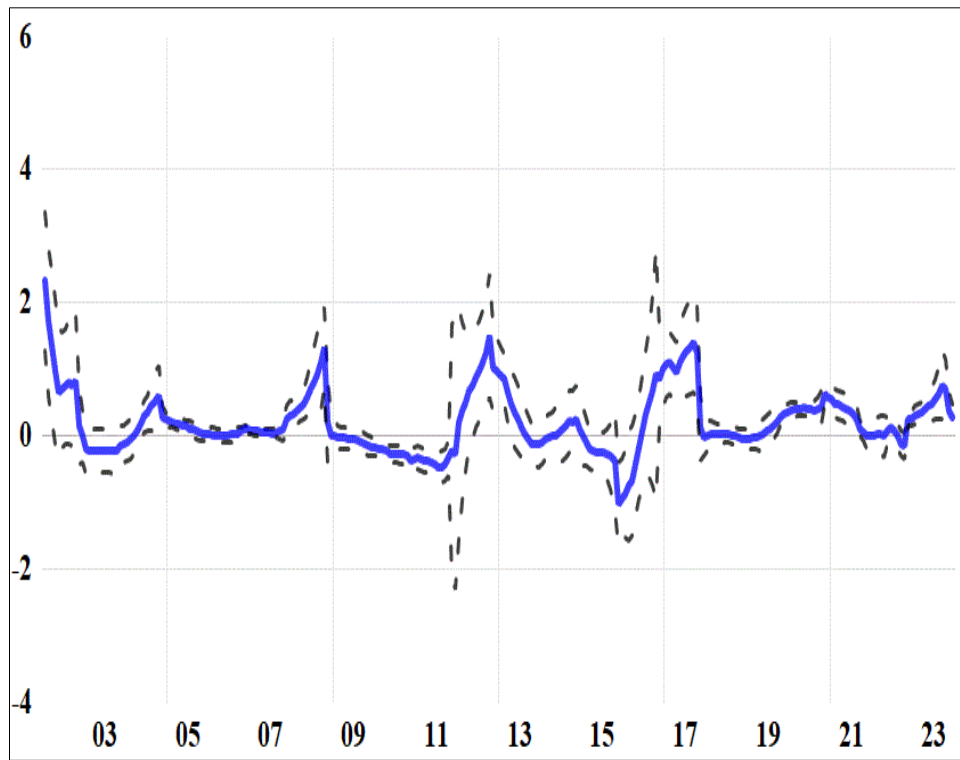
c) Rolling $\hat{\beta}$ Estimates of $\hat{\pi}_{t,t+3}^e = \hat{\alpha} + \hat{\beta} \pi_{t-1}$



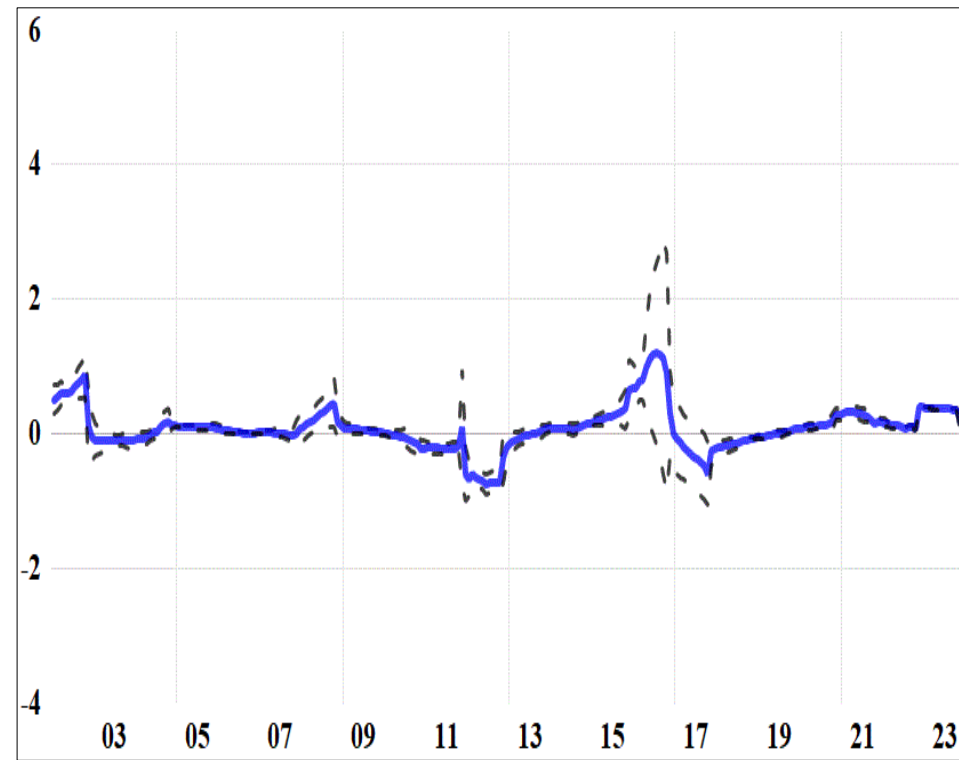
e) Rolling $\hat{\beta}$ Estimates of $\hat{\pi}_{t,t+5}^e = \hat{\alpha} + \hat{\beta} \pi_{t-1}$



b) Rolling $\hat{\beta}$ Estimates of $\hat{\pi}_{t,t+2}^e = \hat{\alpha} + \hat{\beta} \pi_{t-1}$



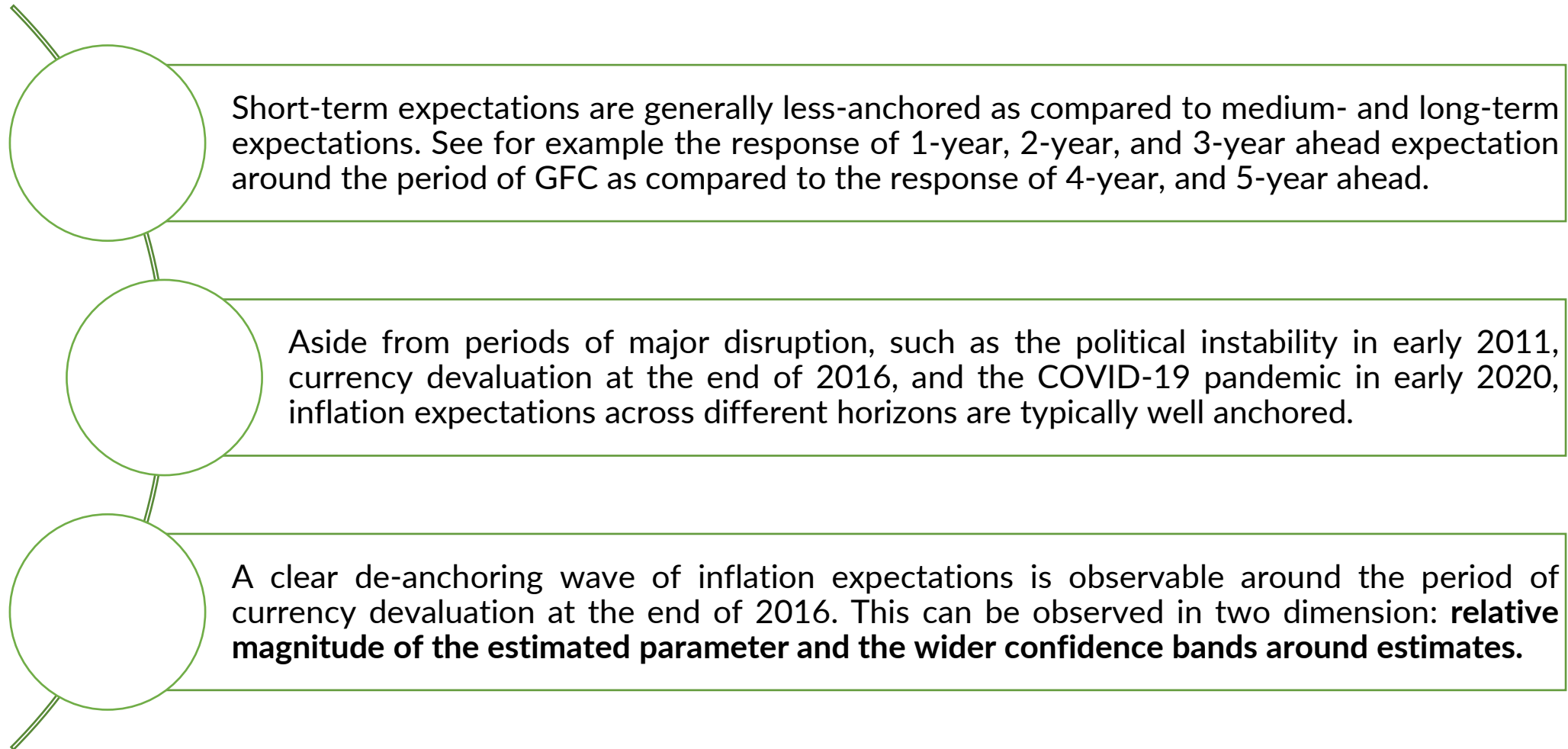
d) Rolling $\hat{\beta}$ Estimates of $\hat{\pi}_{t,t+4}^e = \hat{\alpha} + \hat{\beta} \pi_{t-1}$



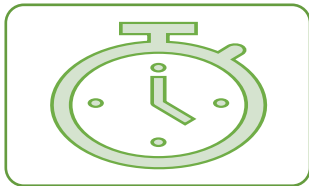
Rolling Estimates of the Expectations Backward-Lookingness Overtime

The stability of the $\hat{\beta}$ coefficient is evaluated by computing estimates over a rolling window with a fixed sample size of 24 months throughout the entire sample from January 2000 to December 2023 (total 288 months).

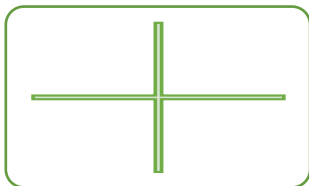
Estimating the Degree of Inflation Expectations Backward-Lookingness Overtime



II) Are Long-Term Expectations Responsive to Short-Term Expectations?



If well anchored, long-term expectations should not co-move with their short-term counterparts. If people and firms believe that the CBE will take necessary measures to bring inflation back to target upon deviation, they will unlikely transfer their uncertainties to long-term expectations.



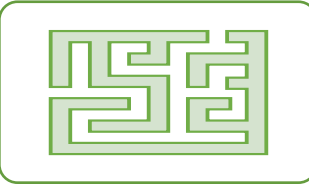
$\pi^e_{t,t+n} = \alpha + \beta \pi^e_{t,t+m} + \varepsilon_t$ with $m < n$ Eq. 2



The model estimation results show that the parameter β , which determines the potential spillover effects from short-term to long-term inflation expectations, is statistically significant across all time horizons.

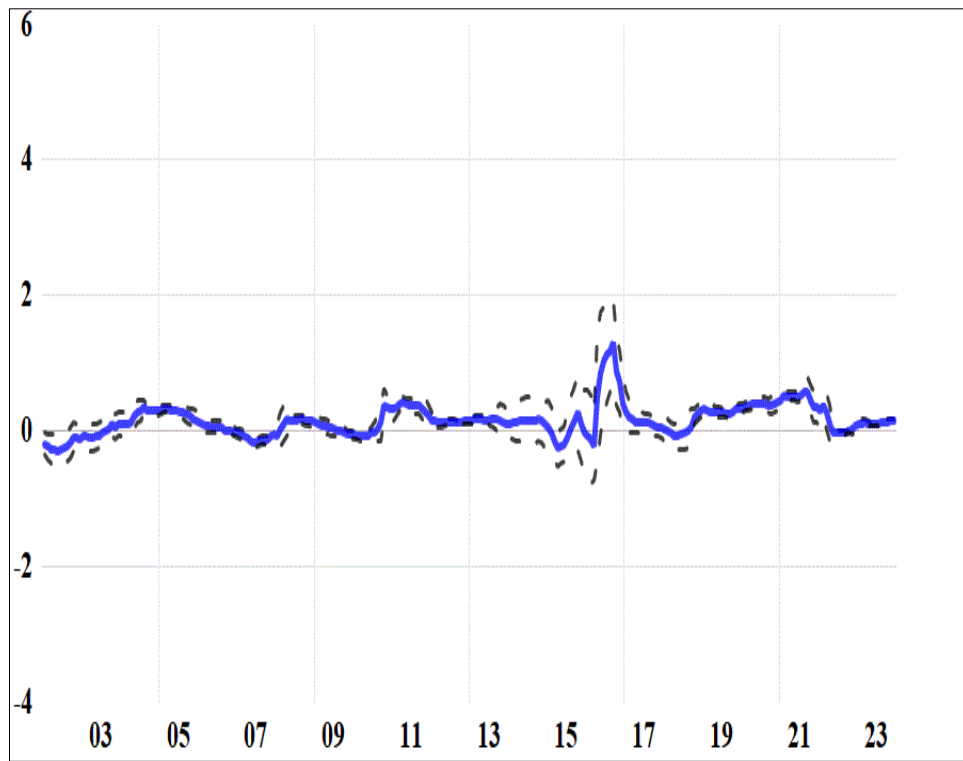


Assessing the anchoring status of inflation expectations over an extended period may pose a challenge due to potential variations in the expectation formation process influenced by changes in the macroeconomic policy environment.

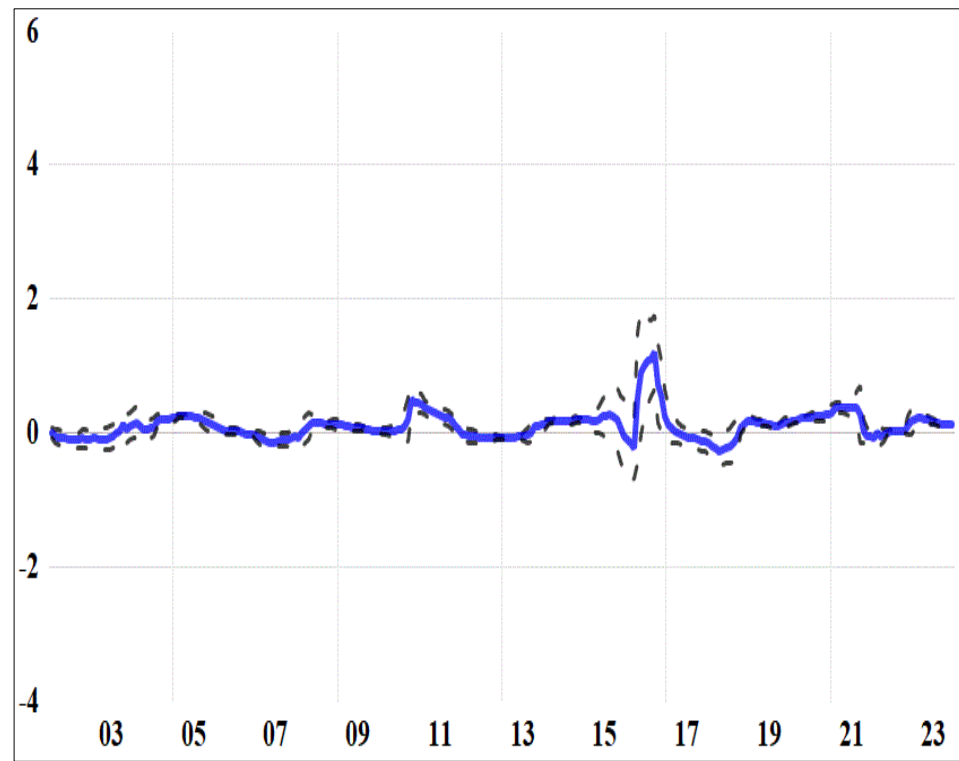


Eq. 2, therefore, will be re-estimated using rolling regressions to evaluate model parameter stability, especially β , over time. Put differently, estimate whether the degree of cross-inflation-expectations spillovers vary overtime.

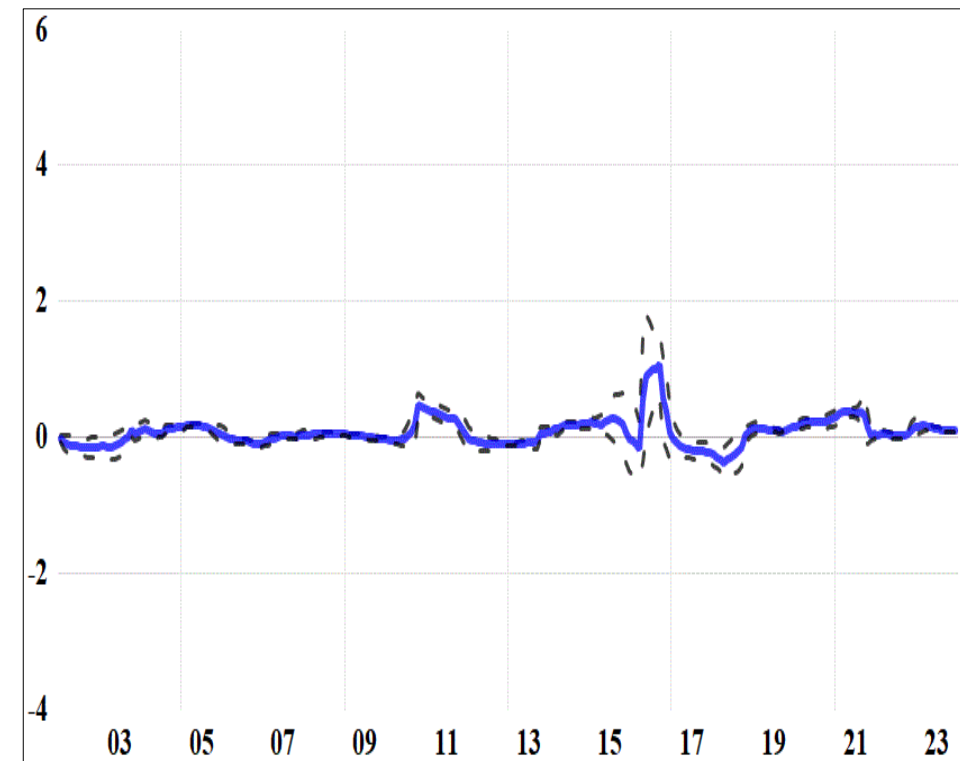
a) Rolling $\hat{\beta}$ Estimates of $\hat{\pi}_{t,t+3}^e = \hat{\alpha} + \hat{\beta} \hat{\pi}_{t,t+1}^e$



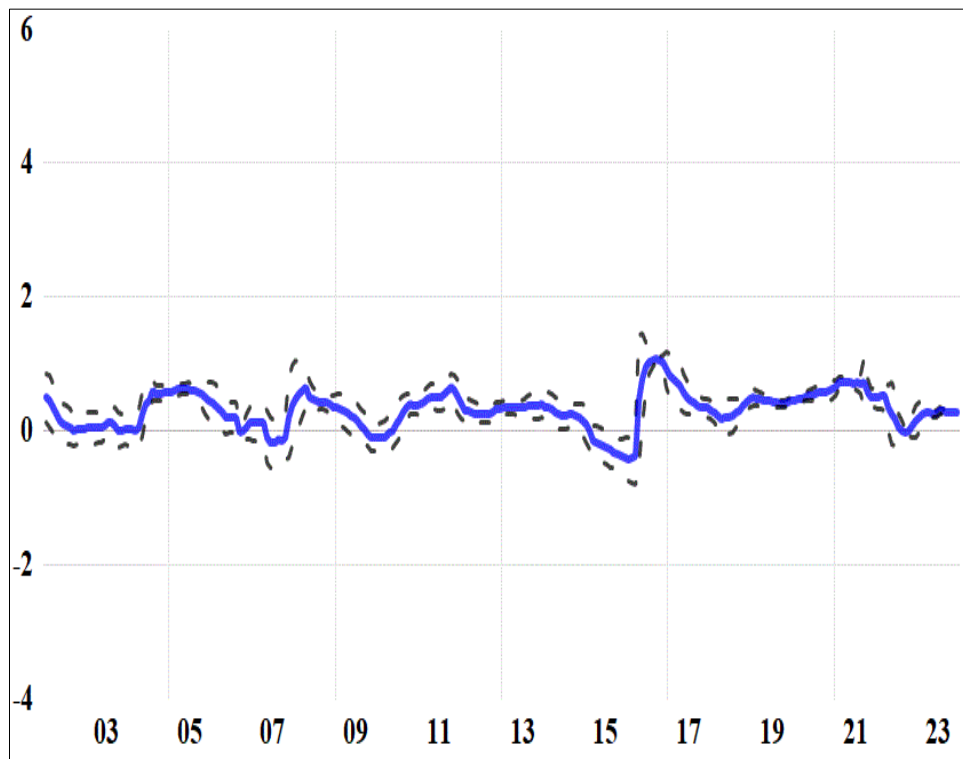
c) Rolling $\hat{\beta}$ Estimates of $\hat{\pi}_{t,t+4}^e = \hat{\alpha} + \hat{\beta} \hat{\pi}_{t,t+1}^e$



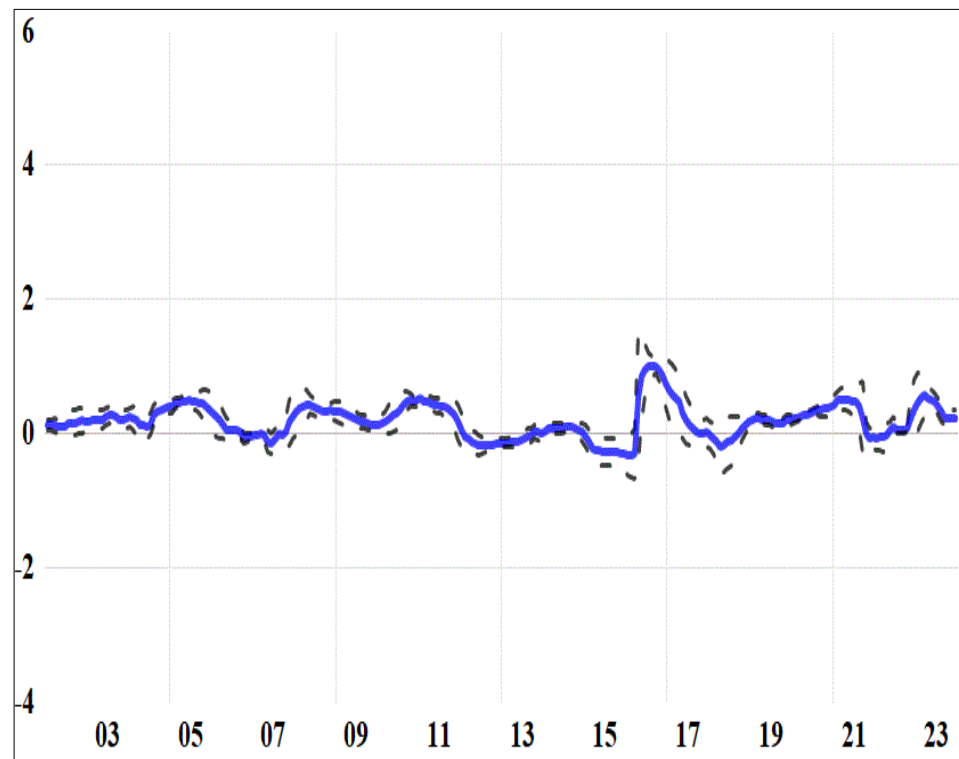
e) Rolling $\hat{\beta}$ Estimates of $\hat{\pi}_{t,t+5}^e = \hat{\alpha} + \hat{\beta} \hat{\pi}_{t,t+1}^e$



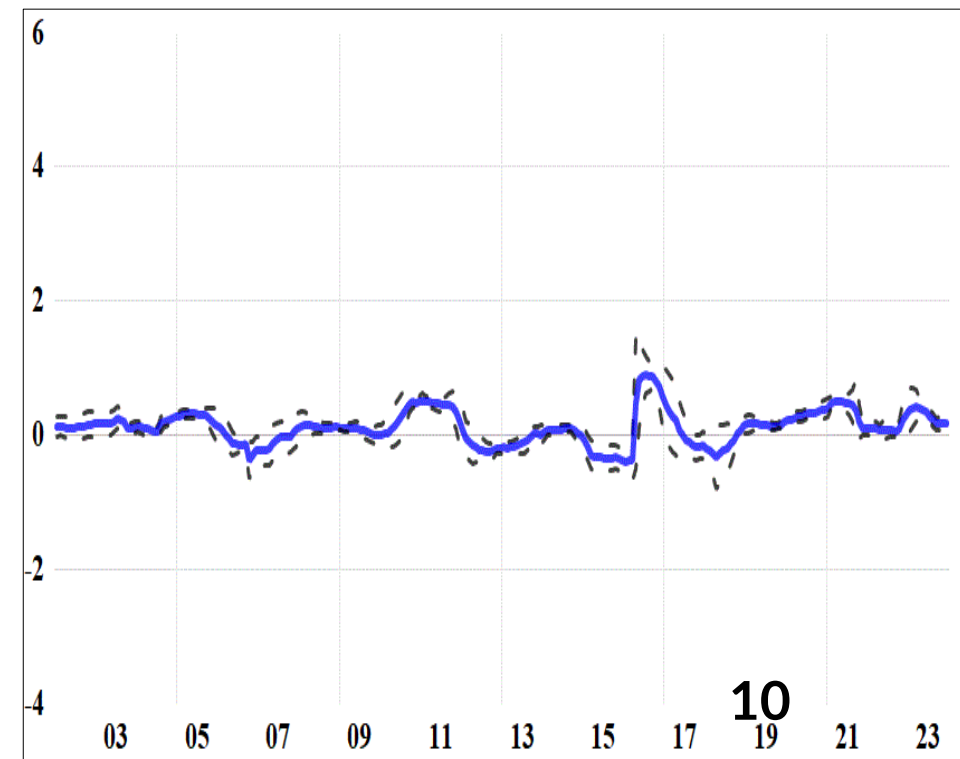
b) Rolling $\hat{\beta}$ Estimates of $\hat{\pi}_{t,t+3}^e = \hat{\alpha} + \hat{\beta} \hat{\pi}_{t,t+2}^e$



d) Rolling $\hat{\beta}$ Estimates of $\hat{\pi}_{t,t+4}^e = \hat{\alpha} + \hat{\beta} \hat{\pi}_{t,t+2}^e$



f) Rolling $\hat{\beta}$ Estimates of $\hat{\pi}_{t,t+5}^e = \hat{\alpha} + \hat{\beta} \hat{\pi}_{t,t+2}^e$



Estimating the Degree of Cross-Expectations Spillovers Overtime

01

The estimated de-anchoring effects of cross-expectations spillovers are much modest in size as compared to those of inflation backward-lookingness.

02

Long-term expectations respond less to short-term expectations compared to medium-term expectations, which is quite typical.

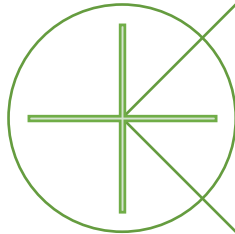
03

Among the key de-anchoring events, currency devaluation in 2016 appears to have had a significant impact on the state of inflation expectations anchoring in terms of **magnitude and uncertainty.**

III) Are Inflation Expectations Responsive to Forecast Revisions?



When economic agents anchor their long-term inflation expectations to the target, they shield themselves from the noise of short-term macroeconomic news or surprises.



$$\Delta \pi_{t,t+5}^e = \alpha + \beta \Delta FR_{t,t+1}^e + \varepsilon_t \dots\dots\dots \text{Eq. 3}$$



The empirical literature employs news regressions to examine this hypothesis, using data and diverse β parameters to regress changes in monthly 5-year ahead inflation expectations on revisions of expert forecasts covering a wide range of macroeconomic indicators.



This set includes indicators such as the average lending rate (ALR), capital account balance (CAB), imports of goods (IoG), exports of goods (EoG), average exchange rate of USD against EGP (AER), government budget balance (GBB), external debt balance (EDB), GDP growth (RGG), unemployment rate (UER), industrial production growth (IPG), and agricultural production growth (APG).

Table2: Least Squares Regressions with Breakpoints of: $\Delta \pi_{t,t+5}^e = \alpha + \beta \Delta FR_{t,t+1}^e + \varepsilon_t$

Estimated Coefficient	Full Sample: 288 Obs.	Episode I: 155 Obs.	Episode II: 43 Obs.	Episode III: 45 Obs.	Episode IV: 45 Obs.
	00M01:23M12	00M01:12M11	12M12:16M06	16M07:20M03	20M04:23M12
$\hat{\alpha}$	0.03*** (0.02)	0.03* (0.02)	-0.07 (0.08)	-0.03 (0.06)	0.07 (0.05)
$\widehat{\beta_{dALR}}$	0.01 (0.05)	0.04 (0.05)	0.44* (0.22)	0.04 (0.06)	0.03 (0.03)
$\widehat{\beta_{dCAB}}$	-0.03** (0.02)	0.00 (0.01)	0.14 (0.22)	-0.15 (0.08)	-0.04 (0.06)
$\widehat{\beta_{dIoG}}$	-0.01 (0.02)	0.02 (0.02)	0.01 (0.02)	0.04* (0.02)	-0.01 (0.01)
$\widehat{\beta_{dEoG}}$	-0.00 (0.02)	-0.02 (0.04)	-0.04 (0.07)	-0.05 (0.03)	-0.02 (0.02)
$\widehat{\beta_{dAER}}$	-0.03 (0.12)	-0.15 (0.12)	2.63*** (0.57)	-0.16 (0.15)	0.04 (0.03)
$\widehat{\beta_{dGBB}}$	-0.00 (0.03)	-0.03 (0.03)	-0.17 (0.15)	-0.07 (0.09)	0.13 (0.10)
$\widehat{\beta_{dEDB}}$	-0.03* (0.02)	-0.00 (0.01)	-0.01 (0.03)	0.00 (0.04)	-0.01 (0.02)
$\widehat{\beta_{dRGG}}$	-0.10 (0.06)	-0.01 (0.05)	-0.00 (0.23)	-0.86** (0.34)	-0.04 (0.05)
$\widehat{\beta_{dUER}}$	-0.00 (0.02)	-0.03 (0.03)	-0.08 (0.05)	-0.04 (0.06)	0.08 (0.06)
$\widehat{\beta_{dIPG}}$	0.03 (0.02)	-0.03 (0.03)	0.08 (0.04)	-0.06 (0.06)	0.03 (0.03)
$\widehat{\beta_{dAPG}}$	0.05 (0.10)	0.26 (0.20)	-0.24 (0.18)	4.35*** (1.09)	-0.07 (0.06)
Adjusted R-Squared	0.02	0.02	0.66	0.62	0.20
Prob(F-statistic)	0.09	0.22	0.00	0.00	0.06

Estimating the Responsiveness of Inflation Expectations to Forecast Revisions: Initial Remarks

Estimating Eq. 3 using linear least squares without accounting for structural breaks would have led to the belief that long-term inflation expectations were fully anchored during the period from 2000 to 2023.

Using breakpoint regression, the data identifies three significant anchoring breakpoints, coinciding with notable economic events and policy changes in December 2012, July 2016, and April 2020.

Hence, rather than a continuous period of anchoring or de-anchoring, breakpoint regressions propose that inflation expectations in Egypt went through episodes of anchoring, de-anchoring, and re-anchoring.

Estimating the Responsiveness of Inflation Expectations to Forecast Revisions: The Complete Story

Episode I (January 2000 to November 2012):

During the period preceding the political instability around 2011–2013, inflation expectations were highly anchored, with nearly all estimates on forecast revision indicators being statistically insignificant.

Episode II (December 2012 to June 2016):

Due to the political instability costs from 2011 to 2013 and the resulting economic burden, inflation expectations turned de-anchored in the second episode, just before the currency devaluation.

The de-anchoring catalyst of that period was known: the highly significant exchange rate surprises!

During that period, a 1% increase (depreciation) in the rate of growth in the bilateral exchange rate of the EGP against the USD would result in a 2.63% jump in the growth rate of five-year ahead inflation expectations, an absolute de-anchoring.

Episode III (July 2016 to March 2020):

In the third episode, de-anchoring lessened, evident in the decreased R-squared from the previous period. However, expectations persisted in a de-anchored state, as confirmed by the p-value of the joint significance test.

Remarkably, the factors driving the de-anchoring of inflation expectations have shifted.

With the onset of COVID-19, there has been a noticeable increase in sensitivity to real variables like GDP growth, agricultural production growth, and imports growth.

Episode IV (April 2020 to December 2023):

In the last episode, the re-anchoring trend persists as individual estimates on forecast revisions turn insignificant. Still, their joint impact on inflation expectations remains significant at a 10% level.

Future Re-anchoring Episodes: The Role of Exchange Rate

1

De-Anchoring

The exchange rate played a significant role in pushing long-term inflation expectations into a state of de-anchoring, particularly during the economic fallout from political and social instability between 2011 and 2013.

2

Re-Anchoring

Evidence supports successful partial re-anchoring following the exchange rate devaluation by the end of 2016, emphasizing the crucial role of the exchange rate flexibility in this process.

3

Coordination and Stability

Coordinated interventions in the foreign exchange market, especially during large currency shocks, are essential to reduce exchange rate volatility and anchor expectations within the newly adopted IT framework.

Future Re-anchoring Episodes: Monetary Policy Effectiveness

Effectiveness

Strengthening the effectiveness of the interest rate as a monetary transmission channel is vital for expectations anchoring within the to-be-adopted IT framework.

Financial Inclusion

Continued advancement of financial inclusion is a key priority, considering the significant percentage of unbanked adults in Egypt as of 2022.

Informal Sector

Addressing the substantial presence of the informal sector is crucial to enhancing the effectiveness of the interest rate channel within the MTM.

Future Re-anchoring Episodes: Risks of Fiscal Dominance

1

Persistent Inflationary Pressures

Fiscal dominance can lead to persistent inflationary pressures that drive inflation expectations away from the announced target, posing a threat to the credibility of the IT framework.

2

Underdeveloped Capital Markets

Underdeveloped capital markets can limit the effectiveness of adjusting interest rates as a key instrument for monetary policy, impacting the central bank's influence on macroeconomic conditions.

Future Re-anchoring Episodes: Communication Strategy



Adaptive Learning:

Implement adaptive learning strategy to understand and respond to economic conditions more effectively, a crucial element in gradually reducing the persistence of inflation rates.



Flexible Inflation Target:

Adopt a flexible inflation target that can adjust to changing circumstances, enhancing the central bank's ability to re-anchor long-term inflation expectations.



Effective Communication:

Implement an inclusive communication approach to enhance the transparency and framework of policy insights.



Transparency Framework:

Improve the transparency framework to project an independent, credible, and accountable monetary authority.



Thank You!