A High-Frequency Nowcasting Framework Using Google Trends, Mixed-Frequency Models, and Machine Learning

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Outline

Disclaimer

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Executive Snapshot: Key Macro Indicators at a Glance

[GDP] Real Output — Q4 2025 (NBS)

YoY Growth (Q4-25)	**4.07%** ▲
Full-Year 2025	**3.87%**
Oil Sector	**6.79%**
Non-Oil Sector	**3.99%**
Economy Size (Nom.)	₦441.5 Trillion

[MPR] Monetary Policy — 304th MPC

MPR	**26.5%** (↓50 bps)
CRR (Commercial)	**45.0%**
CRR (Merchant)	**16.0%**
Liquidity Ratio	**30.0%**
SDF Corridor	+50 / −450 bps

[CPI] Inflation — April 2026 (NBS)

Headline YoY	**15.69%** ▼ (vs 26.82% Apr-25)
Core Inflation	**15.86%**
Food Inflation	**16.06%**
MoM Headline	**2.13%**

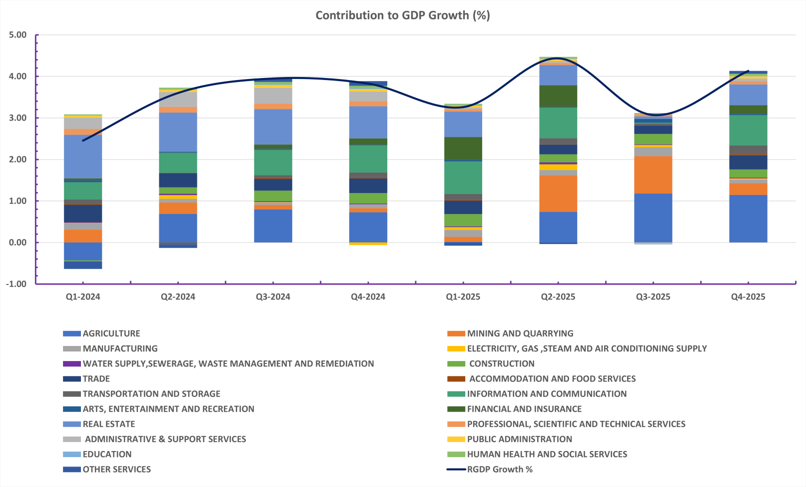
[FX] Exchange Rate — May 15, 2026

USD/NGN Official	₦1,343.77
USD/NGN Market	₦1,400
EUR/NGN	₦1,585
GBP/NGN	₦1,870

Key Signal for the 305th MPC (May 20, 2026)

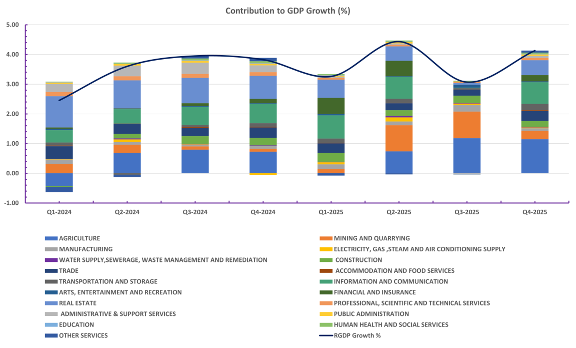
Inflation re-accelerating for 2 consecutive months (Mar–Apr 2026) while real GDP momentum holds above 4%.

Real GDP Growth: Historical Trajectory (2022–2025)



Note: GDP rebased (Base year: 2019 — NBS). Full-year 2025: **3.87%** vs **3.38%** in 2024 (+49bps YoY improvement). Q4-25 is *only the second time in a decade* (ex. post-COVID) that quarterly growth exceeds 4.0%. *Source: NBS Quarterly GDP Reports.*

GDP Sectoral Decomposition: Q4 2025



Key Growth Drivers

- **Finance & Insurance**: **8.30%** — banking reform dividend; capital market deepening
- **ICT**: **7.55%** — digital economy shift; telecoms and fintech
- **Oil Sector**: **6.79%** — crude at **1.58m bpd**, up from 1.54m bpd (Q4-24)
- **Construction**: **5.08%** — infrastructure pipeline
- **Agriculture**: **4.00%** — improved security in food belts

Nominal Economy

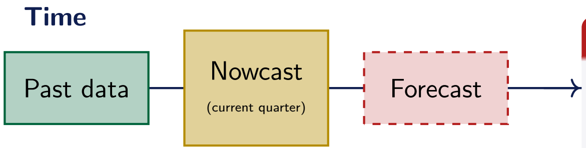
Economy: **₦441.5tn** (2025) vs ₦372.8tn (2024). Agriculture: **25.67%** of nominal GDP.

Structural Weakness

Manufacturing: only **1.13%** YoY — below Q4-24 and Q3-25 levels. High energy costs, tight credit, and FX input costs continue to constrain industrial base.

What is Nowcasting?

Real-time assessment of the current economy



Key Trade-off

Data frequency vs. forecast stability
Daily indicators (e.g., PMI, electricity, port volumes) are informative but can be noisy → nowcasts may change too much over time.

Definition

"Nowcast" = now + forecast. Real-time prediction of a low-frequency variable (e.g., quarterly GDP) using higher-frequency data (daily, weekly, monthly).

Why policy-makers need nowcasts

Assess the **current state** of the economy in real-time, when only incomplete information is available (GDP is released with a long lag).

References:
Lewis, D. J., Mertens, K., & Stock, J. H. (2020). *Nowcasting GDP*.
Woloszko, N. (2020). *Tracking activity in real time with Google Trends*. OECD Economics Dept.

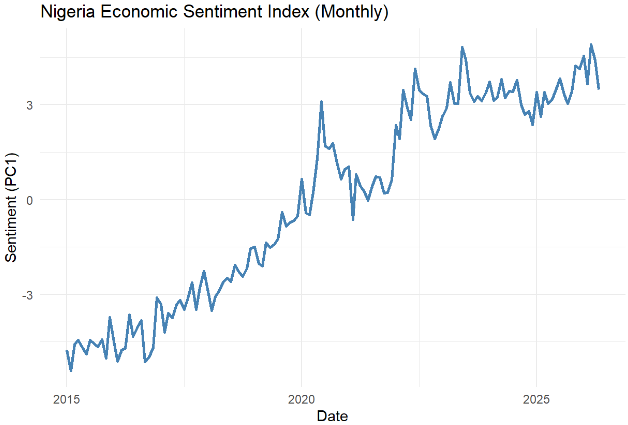
Introducing the Economic Sentiment Index (ESI)

A real-time, high-frequency measure of Nigeria's economic mood using **Google Trends search data**.

- **Data:** 50+ search terms (inflation, dollar to naira, flight to Nigeria, flight tickets, Abuja, Lagos, Kano, rice, PMS, LPG, Geopolitics, fuel subsidy, CBN, Dangote, Tinubu, minimum wage, etc.) monthly, 2015–present.
- **Method:** Principal Component Analysis (PCA) extracts the first principal component = ESI.
- **Scale:** Mean = 0, SD = 1. Positive values = above-average sentiment (relative to 2015–2026 baseline).

ESI $\uparrow$ $\rightarrow$ stronger economic optimism $\rightarrow$ leading indicator for GDP

ESI Trajectory (2015–2026)



Source: Author's Computation

Period	ESI signal	Key context
2015–2019	−4 to −1	Oil crash, 2016 recession
2020–2022	0 to +3	COVID rebound, FX/inflation
2023–2025	> +3	Reforms, Dangote refinery
2026 Q1	+4.37	Peak confidence

Using the ESI Alongside Traditional Indicators

Complement, not substitute – what the ESI adds

- **Real-time pulse:** Available monthly, while GDP is quarterly with a lag.
- **Leads sentiment:** Captures household/business attention before official data.
- **Validates other nowcasts:** ESI nowcast aligns with the range from our main macro model.

Important Caveats

- ESI measures **search behaviour**, not transactions – a leading but noisy indicator.
- "Positive" means better than the **2015–2026 average**, not absolute good.
- Political/seasonal events (elections, holidays) can create temporary spikes.

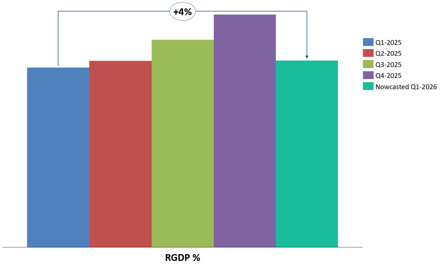
Integrate ESI with PMI, credit, and FX data for a richer nowcasting toolkit.

GDP Nowcasting: Q1 2026 Projection

Nowcasting Framework (Mixed-Frequency)

Applying an **Bridge Equation / MIDAS and Machne Learning** approach using:

- **Activity**: PMI, NESG Business Confidence Monitor (BCM)
- **Financial**: Credit to Private Sector (CPS)
- **Google Trends**: Economic Sentiment Index (ESI)



Q1 2026 Nowcast Range

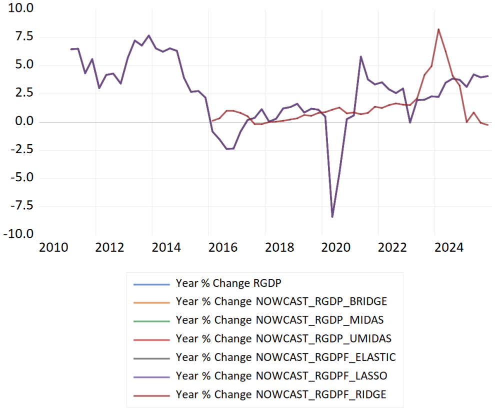
3.80% – 4.20%

Point Estimate: **4.0%** YoY

Central Scenario | Uncertainty: ±0.3pp

Nowcast Result: Q1 2026

Combining ESI, regularised models, and traditional indicators



Model	Q1-26 nowcast (YoY %)	Plausibility
RIDGE	3.62%	✓ Conservative
ELASTIC NET	4.64%	✓ Optimistic
Simple mean	4.64%	✓
Selected nowcast	**4.0%**	**Central**

Why not MIDAS (6.22%) or BRIDGE (14.2%)?

Linear models assume the same relationship holds when the Economic Sentiment Index reaches an all-time high (+4.37). In reality, the relationship flattens – extreme optimism does not translate into extreme growth.

Implication for MPC

Growth above potential (≈3.8–4.2%) ⟶ supports **HOLD**. No overheating – sentiment-driven growth is not inflationary.

Nowcast Model Evaluation

In-sample performance (2010Q1 – 2025Q4)

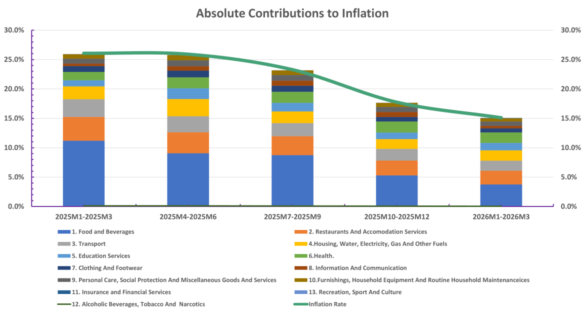
Metric	BRIDGE	MIDAS	RIDGE	LASSO	ELASTIC	Simple mean
RMSE (₦ bn)	2,909	**2,766**	3,151	2,907	3,259	2,897
MAPE (%)	2.99	**2.76**	3.07	2.96	3.10	2.96
Encompassing p-value	0.14	**0.90**	0.003	0.14	0.0006	–

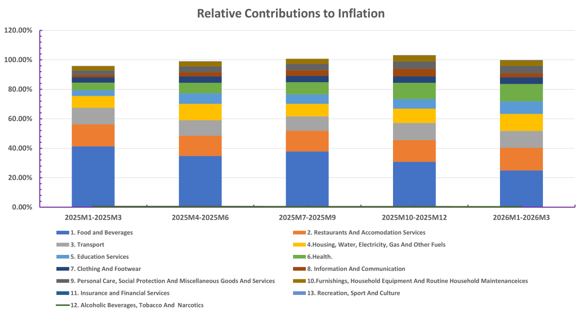
Key findings

- **MIDAS** has the lowest error and best encompassing test $\rightarrow$ best in-sample performer.
- **But** MIDAS extrapolates poorly when ESI is outside historical range (Q1-26 ESI $= +4.37$).
- **RIDGE / ELASTIC** produce plausible Q1-26 nowcasts because they shrink extreme coefficients.

Based on 68 quarterly observations, 6 forecasting models.

Absolute and Relative Contribution to Inflation (Apr 2025 – Apr 2026)





Inflation Drivers & the CBN Dual-Mandate Tension

April 2026: CPI Contribution by Division

Division	Contribution (pp)
Food & Non-Alcoholic Beverages	**6.40**
Restaurants & Accommodation	3.56
Transport	1.70
Miscellaneous Goods & Services	≈1.20
All other divisions	≈2.83
Headline (YoY)	**15.69%**

Source: NBS CPI Report, May 15, 2026.

Disinflation Interrupted

- An **11-month disinflation streak** ended in March 2026
- **Two consecutive upticks**: 15.06% (Feb) → 15.38% (Mar) → **15.69% (Apr)**
- **Food inflation resurging**: 8.89% (Jan) → 12.12% (Feb) → 14.31% (Mar) → **16.06% (Apr)**
- **Core MoM eased sharply**: 1.03% — underlying demand softening
- Rural (16.36%) vs Urban (15.40%) gap signals a **supply-side food shock**, not demand-pull

New Sub-Indices (YoY, Apr 2026)

Farm Produce	**19.8%**
Services	**16.7%**
Goods	**15.7%**

Regional Price Dispersion

Hotspots: Sokoto **25.74%**, Bauchi **22.52%**, Zamfara **22.03%**

Anchors: Edo **5.91%**, Borno **6.72%**, Jigawa **7.04%**

Northern states under persistent cost-push pressure; food

Hybrid Inflation Expectations

Model Specification

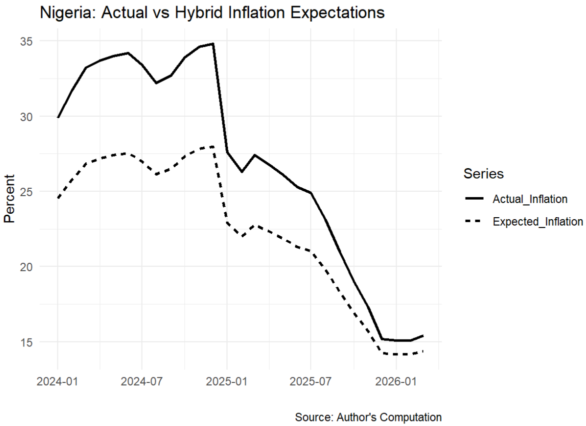
$$\pi_t^e = \alpha\pi_t + (1-\alpha)\pi_t^*$$

Where:

- π_t^e: Expected inflation
- π_t: Actual inflation
- π_t^*: Policy anchor (12%)
- α: Weight on actual inflation (0.7)

Interpretation

- Hybrid expectations: adaptive + policy credibility
- 70% driven by current inflation
- 30% anchored to policy target
- Captures persistence and gradual anchoring



Used in Phillips Curve, monetary policy rule, and forecasting.

Monetary Policy Transmission & 305th MPC Decision Matrix

Current Policy Parameters (304th MPC, Feb 2026)

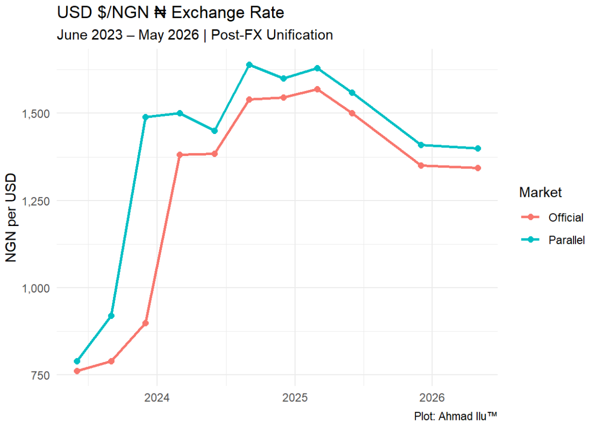
Instrument	Level / Setting
MPR (Benchmark Rate)	**26.50%**
Standing Lending Facility	27.00% (+50bps)
Standing Deposit Facility	22.00% (−450bps)
CRR — Commercial Banks	45.00%
CRR — Merchant Banks	16.00%
CRR — Non-TSA Public Dep.	75.00%
Liquidity Ratio	30.00%

Corridor design: The asymmetric +50/−450bps corridor *penalises idle SDF deposits* while capping SLF access. CBN intent: channel liquidity toward private sector credit.

305th MPC Scenario Analysis

Decision	Key Rationale
HOLD *(Base, 65%)*	Back-to-back inflation uptick; credibility cost of premature easing; real rates positive
−25 bps *(Dovish, 30%)*	Core MoM softening; FX stable; above-potential growth; measured easing manageable
+25 bps *(Hawkish, 5%)*	Pre-emptive against food shock; global oil spike; Naira vulnerability

Naira Exchange Rate: Trajectory & Post-Unification Stabilisation



FX Chronology & Key Metrics

- **Jun 2023**: FX windows unified; Naira floated from ≈₦460 to ≈₦800 overnight
- **Peak weakness**: ≈₦1,640 (Sep 2024)
- **Stabilisation**: CBN interventions, remittances, improved oil receipts
- **May 2026**: Official ₦1,343.77 — Market ₦1,400
- **Spread**: ≈₦56 (**4.2%**) — narrow by post-float standards

External Tailwinds

- Crude output: **1.58m bpd** (Q4-25), recovering from 2024 lows
- FTSE Russell: Nigeria upgraded to **Frontier Market** (Apr 2026); FPI inflows improving
- High MPR sustaining carry-trade; Naira demand

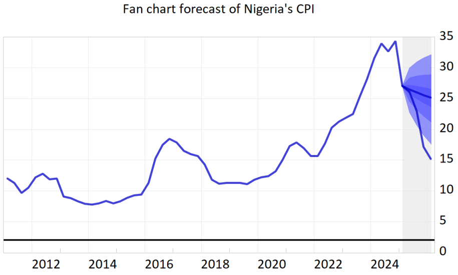
External Sector: Inflation Linkage & Policy Implications

FX Stability as Inflation Anchor

- Naira stabilisation has been the **primary disinflation channel** since Q4 2024
- **Imported Food inflation**: **10.5%** (Apr-26)⇒ well below headline; FX pass-through contained
- **Energy inflation**: only **4.6%** YoY ⇒ domestic fuel price stability a positive outlier
- High MPR (26.5%) attracts **FPI carry** ⇒ FX supply/demand balance sustained
- Premature rate cut risks **carry unwind** ⇒ Naira pressure ⇒ import inflation re-acceleration

External Headwinds

- **US-Iran / Strait of Hormuz tensions** ⇒ global oil supply shock risk
- **US Fed uncertainty** ⇒ delayed pivot could trigger EM capital outflows



Interpretation: Low energy and imported food inflation vs. elevated farm produce and services confirms the April uptick is **domestically driven** (food supply shock) — not an FX pass-through event. This supports **Hold** over a hike.

Integrated Assessment: Pre-305th MPC Scorecard

[GDP] Growth Outlook

Latest GDP (Q4-25)	4.07% YoY ▲
Full-Year 2025	3.87%
Q1-26 Nowcast	≈4.0%
IMF 2026 Forecast	3.8%–4.1%
Assessment	**Resilient**

[FX] External Sector

USD/NGN Official	₦1,343.77
Parallel Spread	≈4.2%
Crude Output (Q4-25)	1.58m bpd
FTSE Upgrade	Frontier Market
Assessment	**Stable**

[CPI] Inflation Outlook

Headline (Apr-26)	15.69% YoY ▼
Core (Apr-26)	15.86%
Food Trend	Re-accelerating ▼
MoM Core	1.03% (easing)
Assessment	**Caution**

Monetary Policy

MPR (current)	26.5%
Real MPR (approx.)	≈+10.8pp
Easing Phase Started	Sep 2025
Cumulative Cuts	100 bps
305th Call	**HOLD**

Key Risks, Upside Catalysts & Analytical Framework

Downside Risks

1. **Food inflation resurgence** — seasonal drought, food belt insecurity
2. **Oil production disruption** — NNPC risks, Niger Delta unrest
3. **Global energy shock** — US-Iran / Hormuz; fuel import spiral
4. **Fiscal dominance risk** — election-cycle spending pressures
5. **EM capital flow reversal** — if US Fed delays pivot
6. **Credit squeeze** — CRR at 45% limits private investment credit

Upside Catalysts

1. **FTSE Frontier upgrade** — sustained FPI inflows; Naira support
2. **Dangote Refinery ramp-up** — FX demand reduction; domestic fuel
3. **Agricultural productivity** — improved security + dry-season farming
4. **ICT & fintech growth** — structural GDP diversification
5. **Diaspora remittances** — strong NGN incentive for formal inflows
6. **Oil price rally** — fiscal windfall; FX reserve accumulation

Nigeria Macroeconomic Diagnostics

"Applying rigorous macroeconomic diagnostics to inform evidence-based monetary policy discourse in Nigeria."

Bottom Line: Nigeria's macro fundamentals are improving; GDP above 4%, FX stable, disinflation structurally underway. However, back-to-back inflation upticks in March and April 2026 counsel against rushing the easing cycle. **The 305th MPC should Hold at 26.5%**, signal data-dependency, and retain the option for a further −25bps cut in Q3-26 if food supply pressures ease and inflation resumes its downward trend.

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