NATIONAL ECONOMIC COUNCIL
REPUBLIC OF INDONESIA

NOWCASTING INDONESIA'S GDP GROWTH

A Dynamic Factor Model Approach

April 2026

Adopted from: "Nowcasting Indonesia", by M. Luciani, M. Pundit, A. Ramayandi & G. Veronese (https://link.springer.com/article/10.1007/s00181-017-1288-4)

Indonesia’s GDP Data Suffers A 5-Week Publication Lag

The Macro Blind Spot

Indonesia’s GDP data suffers a 5-week publication lag. Policy-makers and investors are forced to make real-time decisions using rear-view data.

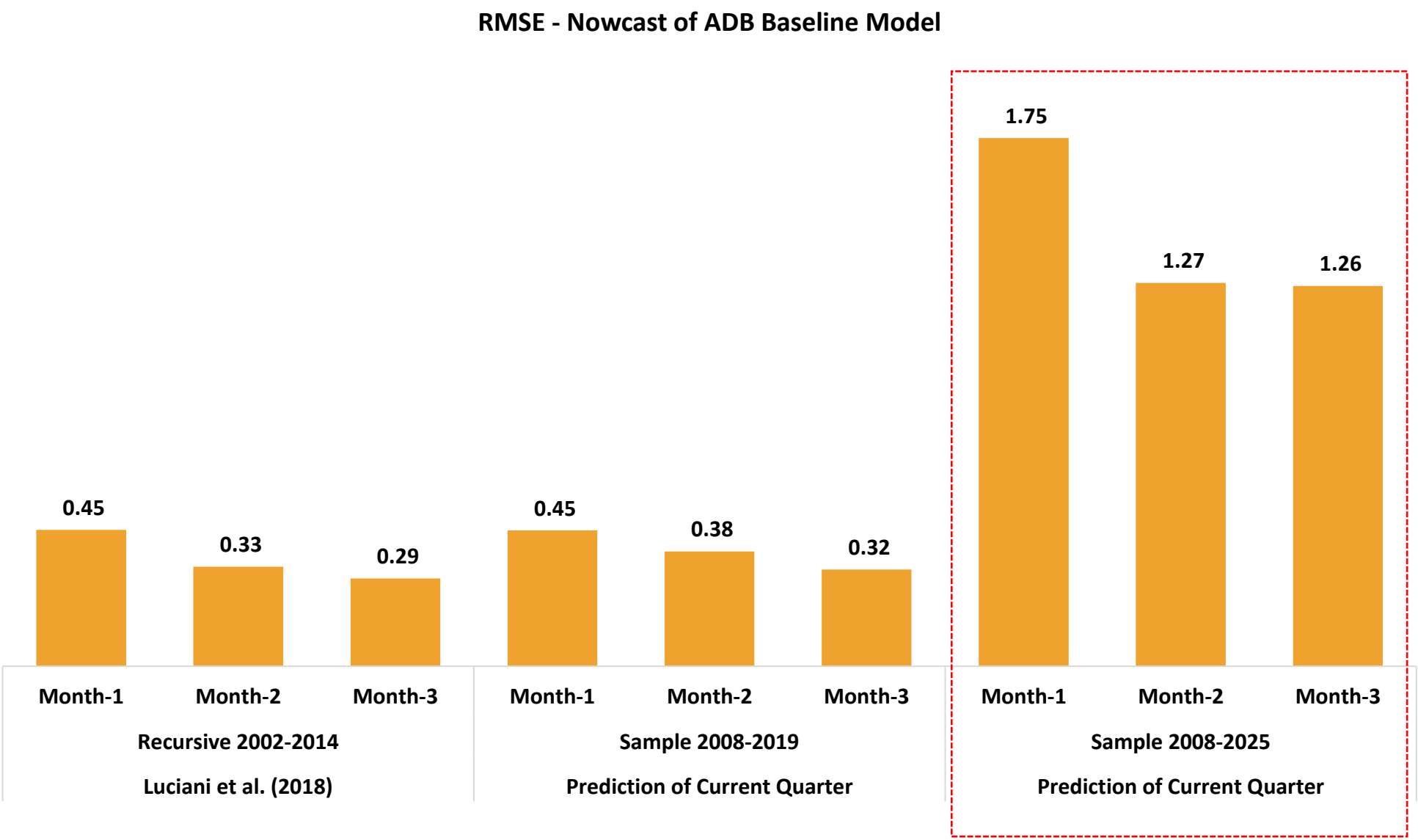
Market Psychology + Math

Replaced algorithm-driven data dumps with the revealed preferences of professional analysts to select 11 leading indicators, processed through a Dynamic Factor Model (DFM).

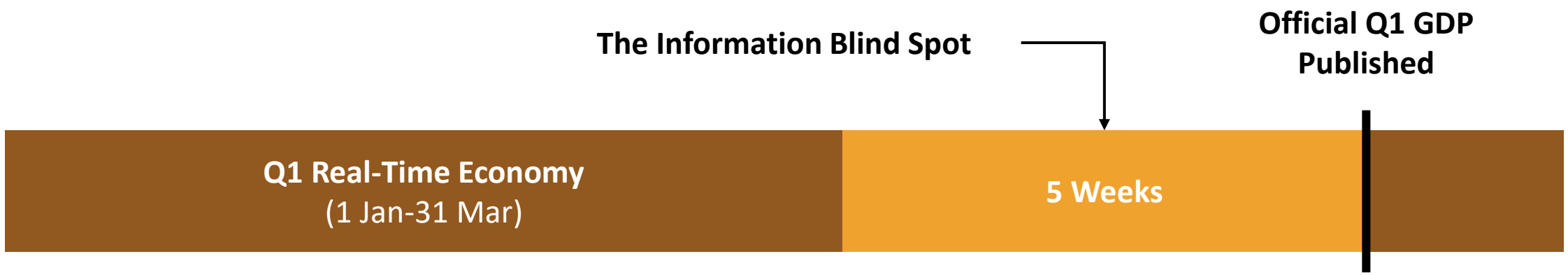
Institutional-Grade Accuracy

Reduces Nowcast errors by up to 38% vs. standard autoregressive models. Predicts final GDP figures more accurately than the government’s own initial releases.

Elevated Post-2019 Errors Demand Model Refinement Amidst Increased Volatility



Macroeconomic Reality Happens in Real Time, while Official Data Does Not



For nearly five months of the year, institutions operate without an official assessment of aggregate economic strength. A high-frequency Nowcast is a fundamental requirement for emerging market governance.

Indonesia-Specific Data Suffers from Several Complications

Standard Macro Challenges	Indonesia-Specific Complications
• Delayed publication releases. • Mixed frequencies (monthly indicators vs. quarterly target). • Missing daily or weekly data points.	• **Fractured history**: No single long GDP series. Accounting standards shifted from SNA 1993 to 2008. • **Crisis distortions**: Severe -15% Asian Financial Crisis crash requires truncating data pre-2002. • **No seasonality adjustment**: Lack of official seasonally adjusted data forces reliance on lagging year-on-year growth tracking.

Market Revealed Preferences Combined with Statistic Tools May Produce A More Precise Projection

Market Revealed Preferences	Instead of mechanical algorithms, track what professional Bloomberg analysts set their daily alerts for. Use market demand to identify the data that actually moves the needle.
Dynamic Factor Models (DFM)	Deploy an advanced econometric engine. This tool strips out unique sector anomalies (noise) to isolate the underlying shared business cycle (signal) across mixed-frequency data

→ The Precise Nowcast

Not All High Frequency Variables Produce High Quality Signal

The Raw Data Dump
All available high-frequency monthly and quarterly Indonesian data series. (Algorithm selection via Least Angle Regression (LARS) failed here, generating unstable noise).

Bloomberg Relevance Index
Filtered by the revealed preference of institutional subscribers. Tracks the highest-ranked alert subscriptions.

Export & Pruning Augmentation
Removed pure inflation targets - "noisy" predictor. Added domestic cement consumption and PMI to capture construction and foreign spillovers.

Result: 11 High-Signal Variables

The Econometric Engine: Dynamic Factor Models

DFM Processor:
VAR(2) and 2 Factors

Extracted Signal	Isolates the shared rhythm of the business cycle.
Idiosyncratic Noise	Strips out sector-specific idiosyncrasies.

Why It Excels in Emerging Markets	
• Mixed frequencies: Seamlessly blends 9 monthly indicators with 2 quarterly indicator.	• Missing data: Kalman-filter mechanics effortlessly bridge gaps when Indonesian data releases are skipped or delayed.

Dynamic Factor Model (DFM)

The DFM is defined as:

$$x_{it} = \boldsymbol{\lambda}_i \mathbf{f}_t + \xi_{it}, \quad i = 1, \ldots, n$$

where:

- x_{it}: observed variable i at time t (stationary)
- $\mathbf{f}_t$: $r \times 1$ vector of common factors
- $\boldsymbol{\lambda}_i$: $1 \times r$ vector of factor loadings
- ξ_{it}: idiosyncratic component

The common factors follow a VAR(p):

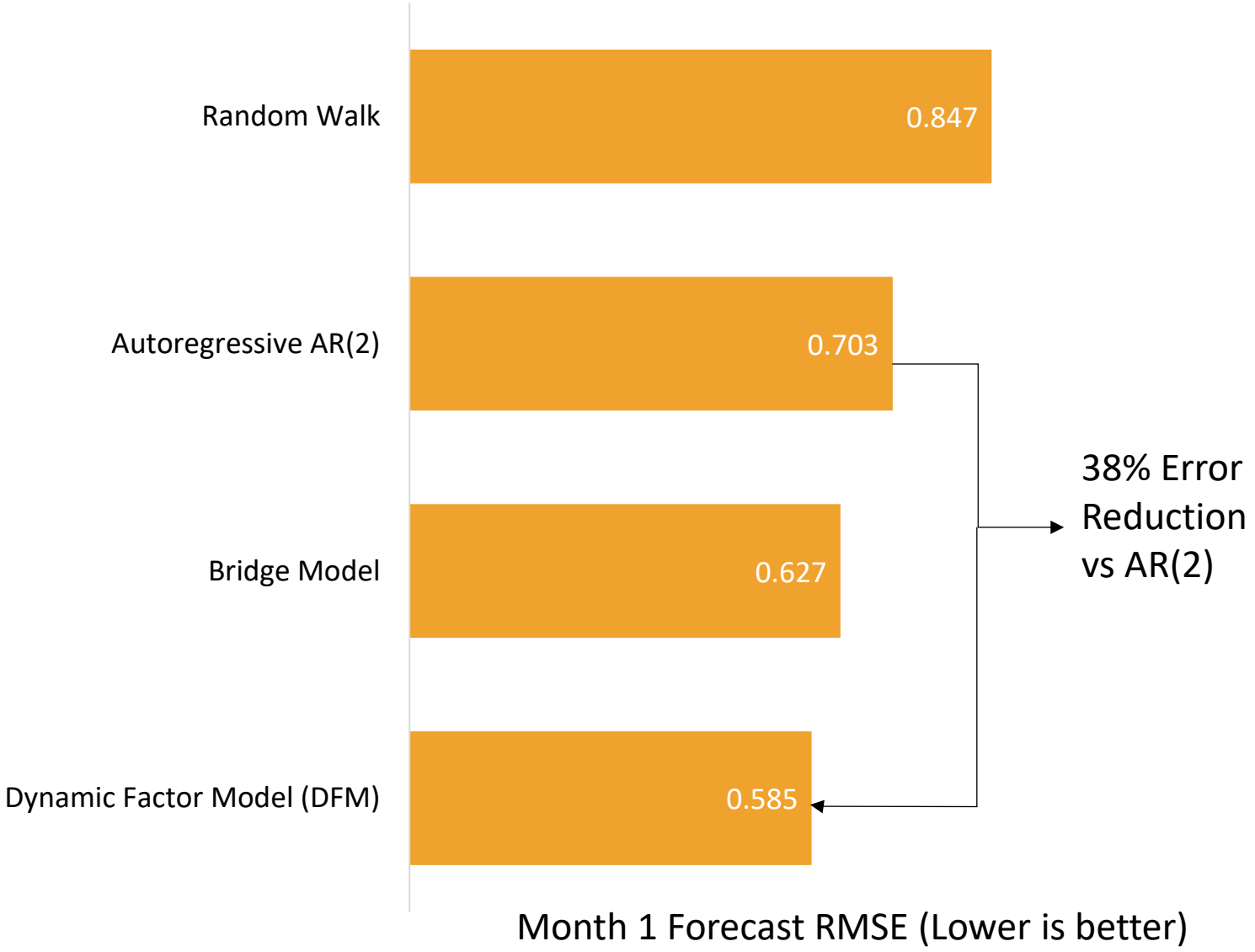
$$\mathbf{f}_t = \sum_{s=1}^{p} \mathbf{A}_s \mathbf{f}_{t-s} + \mathbf{u}_t, \quad \mathbf{u}_t \sim \mathcal{N}(\mathbf{0}, \mathbf{I}_r)$$

The idiosyncratic component follows an AR(1):

$$\xi_{it} = \rho_i \xi_{i,t-1} + e_{it}$$

where e_{it} is white noise.

ADB's Benchmark Model Beats the Statistical Baselines



Why It Excels

The DFM consistently outperforms univariate benchmarks. By extracting common factors from the 11 market-selected indicators, the DFM significantly reduces forecasting errors, proving the curated high-frequency data contains massive predictive power.

List of Indicators

No	Variable	Freq.	Transformation	Model Type
1	Central Bank policy rate	M		Model 1 (Base Model ADB)
2	Money Supply M2	M	YoY	
3	Exports; fob	M	YoY	
4	GDP	Q	YoY	
5	Car sales	M	YoY	
6	Consumption: Cement: Domestic	M	YoY	
7	Imports: Consumption Goods	M	YoY	
8	Imports: Capital Goods	M	YoY	
9	Imports: Raw Materials	M	YoY	
10	PMI Developing Economies	M		
11	Business Tendency Index, Replaced with SKDU	Q		
12	Electricity consumption	M	YoY	Model 2 (Add these variables)
13	NTL_Radiance	M	YoY	
14	Fiscal Income Tax	M	YoY	Model 3 (Include All Variables)
15	Fiscal VAT	M	YoY	
16	Fiscal Central Government Personnel Expenditure	M	YoY	
17	Fiscal Regional Transfer (TKD)	M	YoY	

Correlation with GDP Growth

No	Variable	Pearson R Correlation	P-Value
1	Central Bank policy rate	-0.7363	0 (***)
2	Money Supply M2	0.1703	0.1046
3	Exports; fob	0.3057	0.0004 (***)
4	Car sales	0.2337	0.0079 (***)
5	Consumption: Cement: Domestic	0.663	0 (***)
6	Imports: Consumption Goods	0.3305	0.0013 (***)
7	Imports: Capital Goods	0.3517	0.0006 (***)
8	Imports: Raw Materials	0.3877	0.0001 (***)
9	PMI Developing Economies	0.1973	0.067 (*)
10	Business Tendency Index, Replaced with SKDU	0.5581	0 (***)
11	Electricity consumption	0.5885	0 (***)
12	NTL_Radiance	0.3581	0.0091 (***)
13	Fiscal Income Tax	0.4185	0.0003 (***)
14	Fiscal VAT	0.4180	0.0003 (***)
15	Fiscal Central Government Personnel Expenditure	0.3239	0.0055 (***)
16	Fiscal Regional Transfer (TKD)	0.1236	0.3011

*All in %YoY, except PMI ASIA & Policy Rate

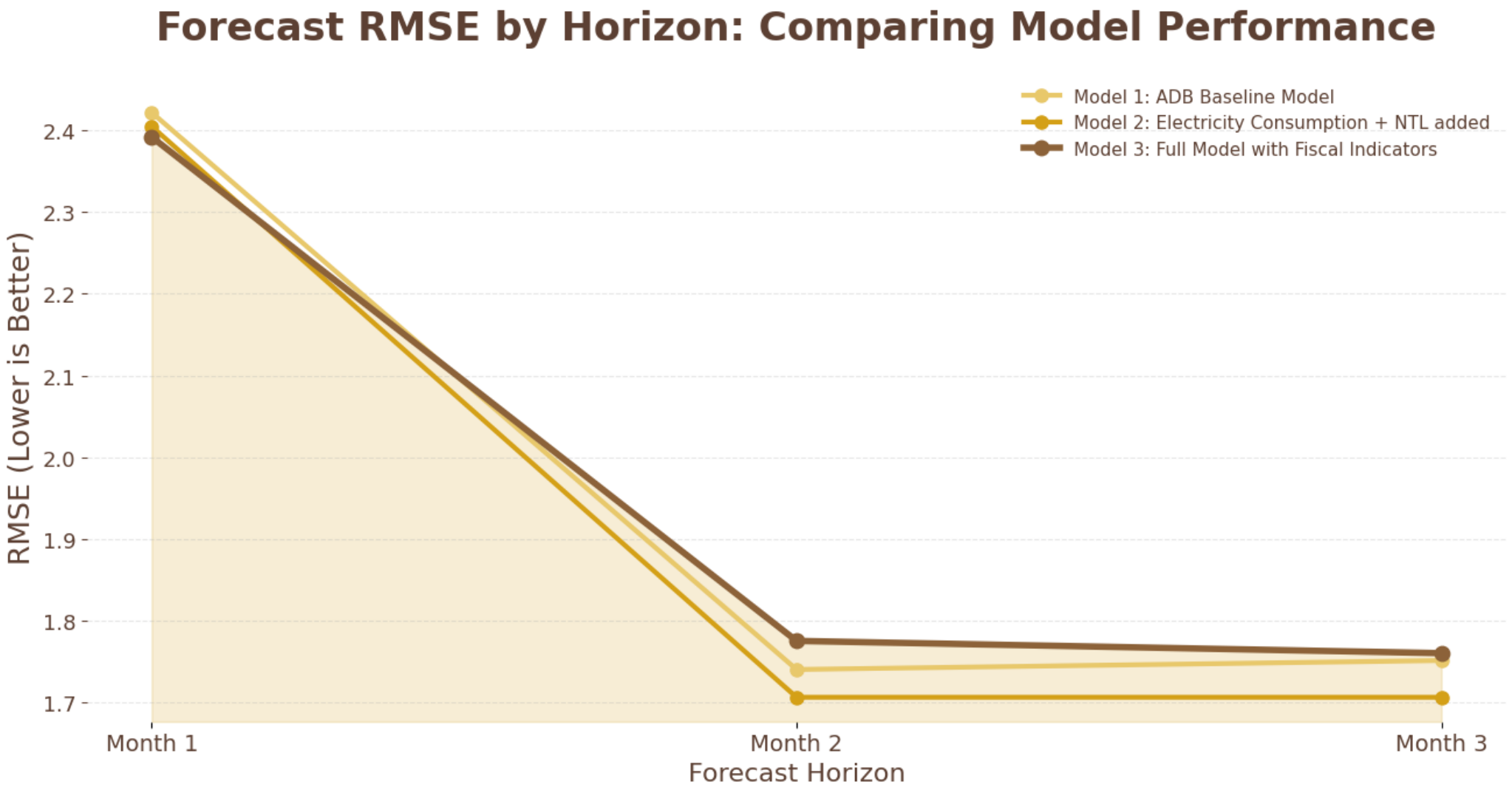
RMSE – Nowcast

	Prediction of Current Quarter Sample 2017-2019			Prediction of Current Quarter Sample 2017-2025		
	Month-1	**Month-2**	**Month-3**	**Month-1**	**Month-2**	**Month-3**
Model 1: ADB Baseline Model	0.256	0.170	0.234	2.422	1.740	1.751
Model 2: Electricity Consumption + NTL added	0.261	0.178	0.246	2.405	1.706	1.706
Model 3: Full Model with Fiscal Indicators	0.243	0.174	0.250	2.392	1.775	1.760

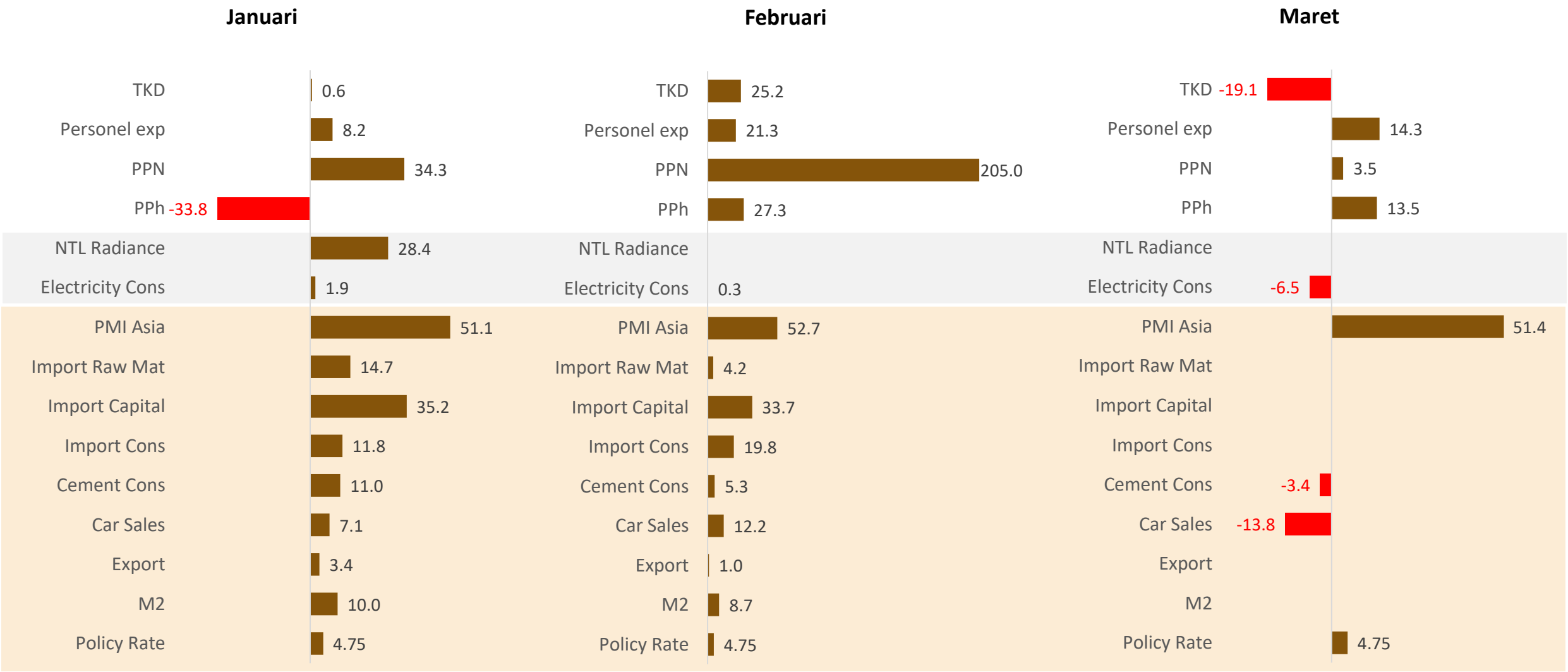
RMSE – BackCast

	Prediction of Current Quarter Sample 2017-2019	Prediction of Current Quarter Sample 2017-2025
	Month-1	**Month-1**
Model 1: ADB Baseline Model	0.238	1.796
Model 2: Electricity Consumption + NTL added	0.243	1.757
Model 3: Full Model with Fiscal Indicators	0.228	1.761

Evaluation: Which Indicators do Lower the RMSEs?



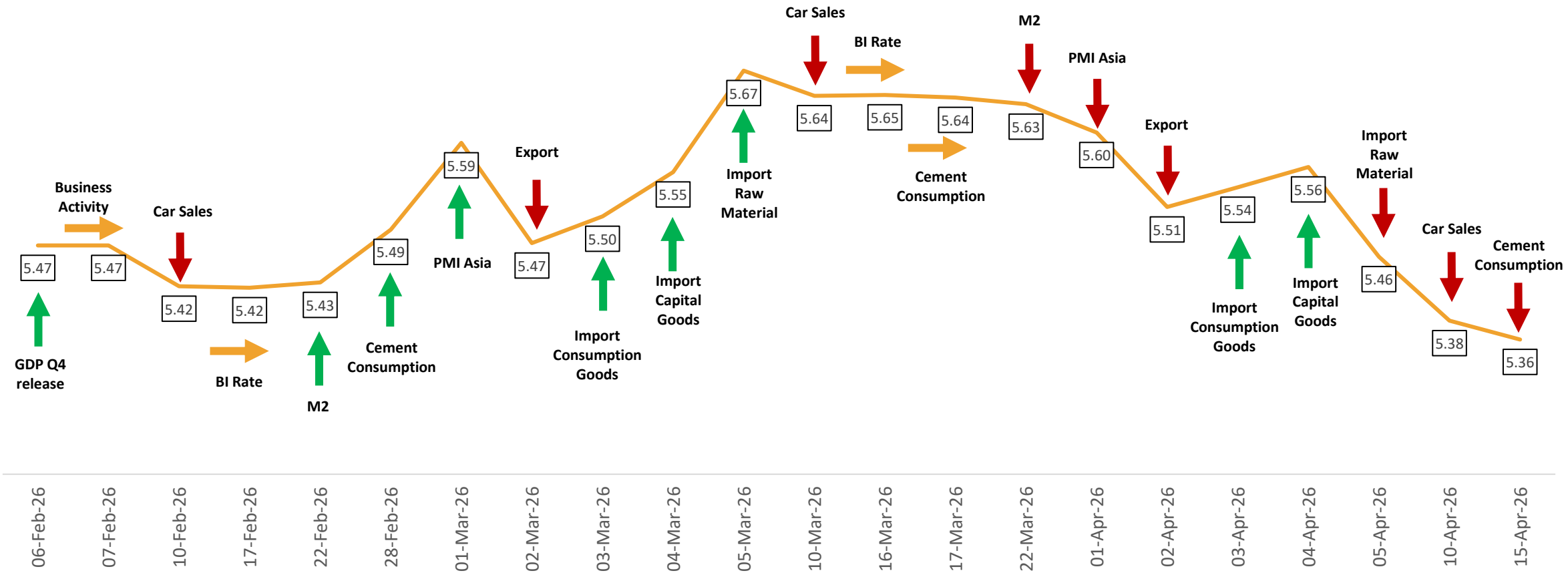
Momentum Q1 2026



*All in %YoY, except PMI ASIA & Policy Rate

Nowcasting Baseline Model with 11 Variables Yields Nowcast of 5,36% YoY in Q1 2026

Nowcast of GDP Growth Q1 2026 – Model 1
(Persen)



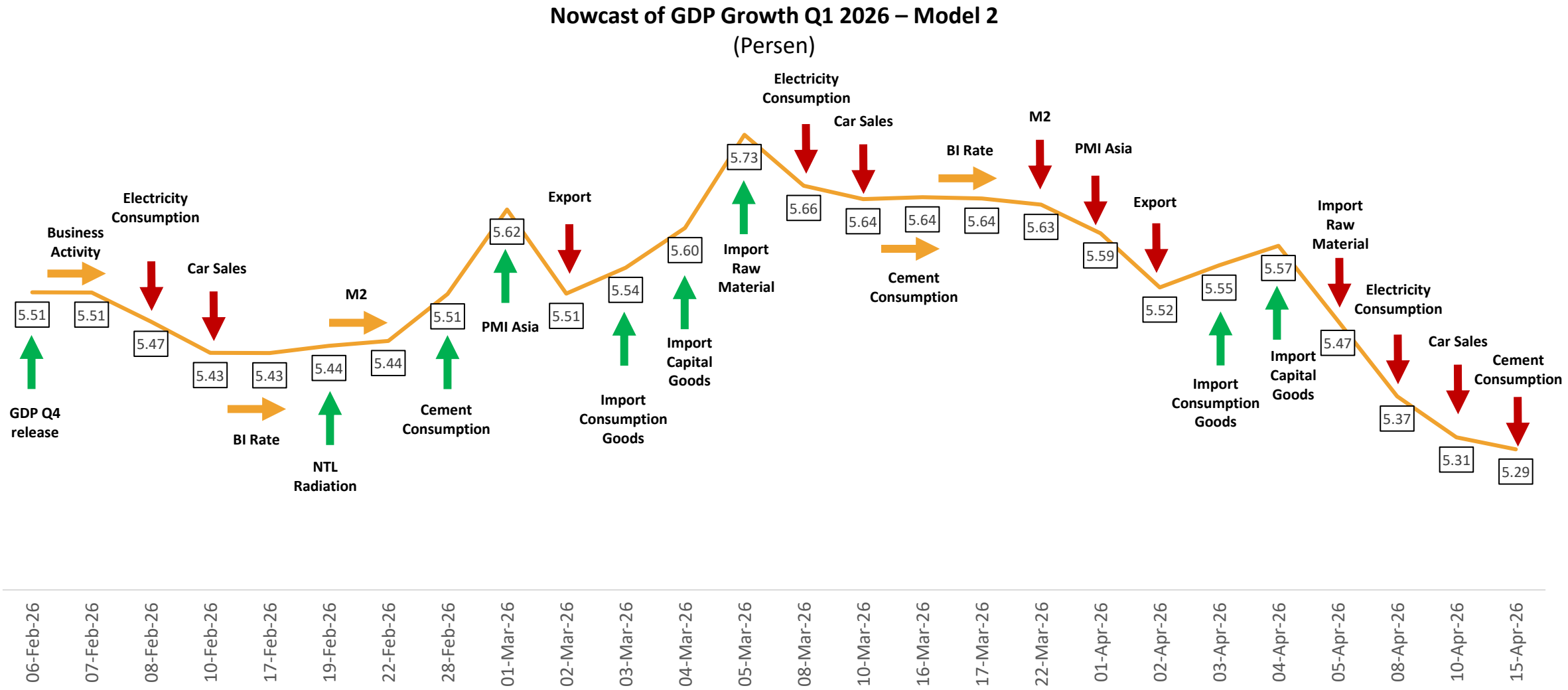
Increasing Momentum

Decreasing Momentum

Stable Momentum

Source: DEN's Estimation

Including Electricity Consumption & NTL variables, Nowcast Q1 Decreases to 5.29% YoY



Increasing Momentum

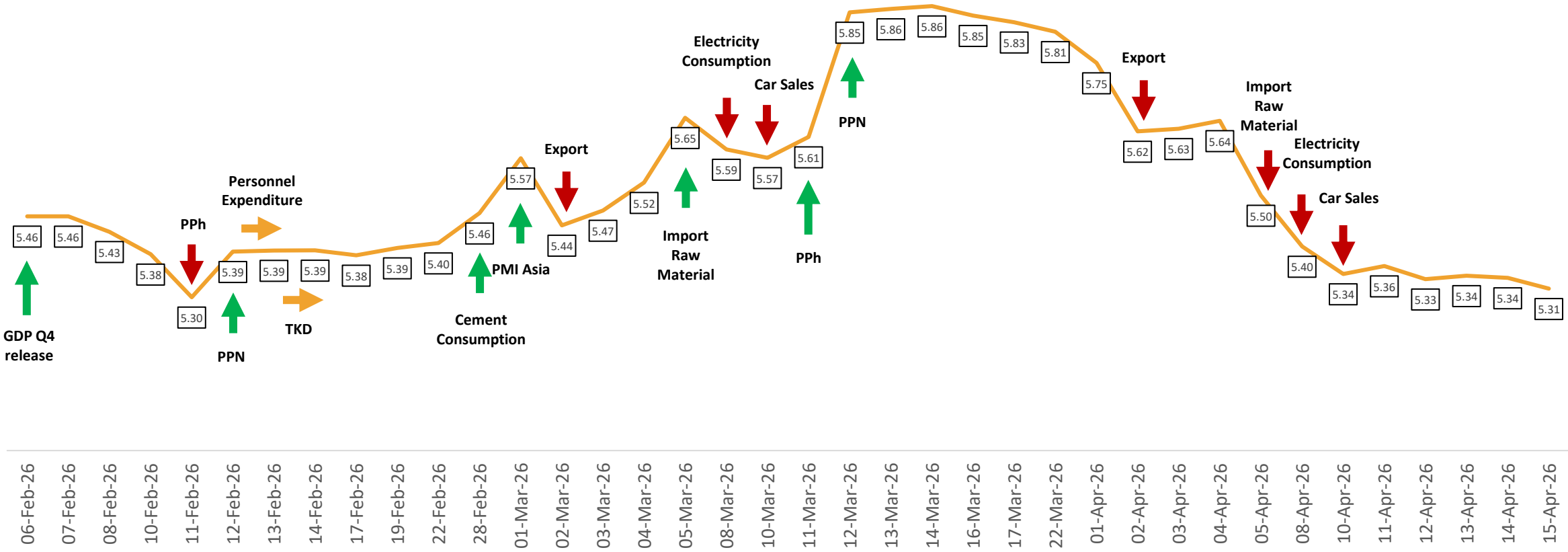
Decreasing Momentum

Stable Momentum

Source: DEN's Estimation

The Addition of Fiscal Variables Elevates the Nowcast Result to 5.31% YoY in Q1 2026

Nowcast of GDP Growth Q1 2026 – Model 3
(Persen)



Increasing Momentum

Decreasing Momentum

Stable Momentum

Source: DEN's Estimation

Projected Indonesia's GDP Growth of 2026Q1: Nowcasting Results Vs Institutional Benchmark

	Q1 2026	Q2 2026	Q3 2026	Q4 2026	FY 2026
Nowcasting Model 1	5.36	5.13	5.11	5.11	5.18
Nowcasting Model 2	5.29	5.03	5.04	5.06	5.10
Nowcasting Model 3	5.31	5.05	5.08	5.12	5.14
Bloomberg Consensus (Median, Lo-Hi) (As of 16/04 2026)	**5.3** (4.8-5.6)	**5.0** (4.6-5.2)	**5.0** (4.7-6.0)	**5.0** (4.2-5.3)	**5.1** (4.6-5.4)

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THANK YOU