NAMM Nigerian Association of Macroeconomic Modelers
...Modeling a greater economy

5TH ANNUAL NAMM INTERNATIONAL HYBRID CONFERENCE 2026

Communiqué

Issued at the Close of the Pre-conference Workshops

University of Ibadan, Nigeria | 23 and 24 November 2026

CONFERENCE	5th Annual NAMM International Hybrid Conference 2026
CONFERENCE THEME	Data-Driven Macroeconomic Modelling for Stability, Accountability, and Inclusive Development in Africa
DATES	Monday 23 and Tuesday 24 November 2026
VENUE	Otunba Subomi Balogun Hall, Conference Centre, University of Ibadan, Nigeria
FORMAT	Hybrid: in person and online
WORKSHOP 1	**Basic DSGE Modelling: A Step-by-Step Approach** Lead Facilitator: Prof. Philip O. Alege Cofacilitator: Dr. Dauda Musa
WORKSHOP 2	**Machine Learning for National Policy Analysts** Lead Facilitator: Prof. Olusanya E. Olubusoye
PARTICIPANTS	Policy analysts, researchers and postgraduate scholars from the Central Bank of Nigeria, universities and research institutions, attending physically and virtually

1 BACKGROUND

1.1 The Nigerian Association of Macroeconomic Modellers (NAMM) convened two preconference workshops on 23 and 24 November 2026 at the Otunba Subomi Balogun Hall, Conference Centre, University of Ibadan, as the opening segment of its 5th Annual International Hybrid Conference. The workshops were held in a hybrid format, with participants attending in person and online.

1.2 The workshops were designed to deepen national capacity in the two modelling traditions that now define frontier policy analysis: structural Dynamic Stochastic General Equilibrium (DSGE) modelling for causal policy questions, and Machine Learning (ML) for prediction, nowcasting, early warning and targeting. Both speak directly to the Conference theme, Data-Driven Macroeconomic Modelling for Stability, Accountability, and Inclusive Development in Africa.

1.3 Workshop 1, *Basic DSGE Modelling: A Step-by-Step Approach, was led by Prof. Philip O. Alege with Dr Dauda Musa as co-facilitator*. Workshop 2, *Machine Learning for National Policy Analysts*, was led by

Prof. Olusanya E. Olubusoye and the NAMM facilitation team. The workshops opened with remarks by Mr. Iredele Ogunbayo, followed by introductions from participants drawn from the Central Bank of Nigeria (CBN), universities and research institutions.

1.4 This Communiqué records the principal deliberations, the issues and challenges identified, and the recommendations and policy actions adopted by participants at the close of the workshops.

2 WORKSHOP 1: BASIC DSGE MODELLING

Theoretical foundations

2.1 The Workshop characterised the economy as a system of interconnected agents, comparable to the organs of the human body, in which households, firms, government, the monetary authority and the rest of the world interact across the agriculture, industry and services sectors. Equilibrium represents the optimal state of that system, while shocks such as health crises, geopolitical conflict and the removal of fuel subsidy generate temporary imbalances to which rational agents respond by modifying their behaviour.

2.2 Participants noted that DSGE models capture uncertainty and forward-looking expectations in ways that conventional econometrics, constrained by historical data, cannot. The models rest on microeconomic foundations, utility maximisation under budget constraints, monopolistic competition and the non-neutrality of money in the short run. Because shocks transmit across interdependent global markets regardless of their geographic source, specification of the external sector is integral to any credible model of the Nigerian economy.

Model formulation

2.3 Facilitators guided participants through the formulation of a representative household maximising lifetime utility subject to consumption and budget constraints; the law of motion for capital, accounting for depreciation and current investment; the Euler equation linking future to present consumption; and the firm problem, built on an aggregate production function that determines the cost of capital and nominal wages. Technology shocks were specified as a first-order autoregressive process with persistence and innovation terms.

2.4 The Workshop emphasised that the number of endogenous equations must equal the number of endogenous variables to satisfy the Blanchard and Kahn condition for a unique, stable solution. The prescribed modelling sequence comprises decentralised optimisation, definition of agent behaviour, specification of the rest of the world, computation of the steady state as the baseline path, and simulation, which must precede estimation.

Practical simulation with Dynare

2.5 In the practical session, participants installed and configured MATLAB and Dynare. Dynare version 4.6.4 was recommended over later releases, which presented launch and graphing errors on participant machines. Parameters were calibrated from the literature on African economies and adapted to Nigerian consumption behaviour. Raising the habit formation parameter from 0.70 to 0.90 resolved model execution difficulties and brought simulated dynamics closer to observed macroeconomic outcomes.

2.6 Simulations integrated fiscal parameters, including public debt and government revenue, and examined three inflation regimes: a lower band of 2 to 3 per cent, a medium band of 5 to 7 per cent, and an upper band of 13 to 15 per cent. The results indicated that, of the four economic agents modelled, households bear the heaviest burden under the upper inflation band. Model output included the variance matrix of exogenous shocks, policy and transition functions, theoretical moments, correlation matrices and impulse response functions.

2.7 Facilitators observed that manual coding of large equation systems is slow and error-prone, and that artificial intelligence tools can accelerate the preparation of nonlinear model code, provided every output is verified against the underlying theory. Participants were advised that proficiency in DSGE modelling combined with machine learning will become a core professional requirement for macroeconomic analysts within the next five years.

> **KEY MESSAGE FROM WORKSHOP 1**
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> *Structural models remain the instrument of choice for answering causal policy questions; their value depends on sound theory, careful calibration to African realities, and disciplined computation.*

3 WORKSHOP 2: MACHINE LEARNING FOR NATIONAL POLICY ANALYSTS

The policy analyst challenge

3.1 The Workshop opened by framing the core tension facing policy analysts. Decision makers require timely readings of the economy, reliable forecasts of inflation, output and revenue, early warning of shocks and crises, and precise targeting of public resources. Analysts, however, work with official statistics released after long lags, short and noisy series subject to frequent revision, few observations relative to candidate indicators, and repeated structural breaks, among them the exchange rate unification of June 2023, the removal of petrol subsidy in 2023, and the 2025 rebasing of the Consumer Price Index and Gross Domestic Product.

3.2 Machine learning was defined as a set of methods that learn patterns from data to make predictions or discover structure, with performance judged strictly on data the model has not seen. Participants examined the three families of supervised, unsupervised and reinforcement learning, and the distinction between the econometric culture, which prioritises coefficient interpretation and theory, and the machine learning culture, which prioritises out of sample predictive accuracy and functional flexibility.

3.3 The Workshop affirmed that machine learning complements, and does not replace, structural DSGE and Computable General Equilibrium (CGE) models. Structural models answer causal questions, such as the effect of a change in the Monetary Policy Rate on inflation. Machine learning answers predictive questions, such as next month's inflation or the identification of poor households for social transfers. Many consequential policy decisions rest on accurate prediction rather than causal estimation.

Data foundations

3.4 Participants recognised that data preparation consumes 70 to 80 percent of an analyst's time and that data quality outweighs algorithmic sophistication in determining forecast accuracy, since flexible models learn errors and breaks as readily as economic signals. The Workshop reviewed four families of data: official statistics from the National Bureau of Statistics (NBS), the CBN and the Debt Management Office; international databases of the IMF, World Bank and African Development Bank; national and private surveys; and alternative data, including electronic payments, mobile money, satellite night lights and web scraped prices.

3.5 Official statistics were affirmed as the anchor and target of any forecasting system. The Workshop drew attention to the 2014 rebasing, under which measured GDP rose by about 89 percent overnight and created two statistical regimes; to the growth of electronic payments during the 2023 naira cash shortage, which reflected a shift in payment behaviour rather than in economic activity; and to an illustrative revision path in which a real GDP growth estimate moved four times, from 3.0 to 3.9 percent. Evaluating a nowcast against the final figure judges it against information unavailable at the time of forecast.

3.6 The Workshop set out a disciplined data pipeline covering ingestion with date stamps, inspection, cleaning, transformation, alignment and documentation, fully automated in R or Python. Participants examined the prevention of data leakage, the treatment of data missing completely at random, missing at random and missing not at random, the ragged edge problem of series ending on different dates, mixed frequency methods including bridge equations, dynamic factor models and MIDAS, and feature engineering in which every feature must carry an economic rationale and use only information available on the forecast date. Compliance with the Nigeria Data Protection Act 2023, through a lawful basis for processing and the use of aggregated and anonymised data, was underscored.

Supervised learning methods

3.7 Participants were taken through honest model evaluation for time series: chronological rather than random splitting, a test set reserved and used only once, rolling window cross-validation to adapt to structural breaks, relative RMSE against simple benchmarks, and the Diebold and Mariano test to establish whether observed gains exceed chance. The Workshop covered ridge, Lasso, and elastic net regression, with feature standardisation before penalisation; single decision trees and their instability; random forests; and gradient boosting, along with their relative interpretability and the inability of tree-based methods to extrapolate beyond historical ranges.

Policy applications

3.8 Three applications were demonstrated on a simulated monthly dataset spanning July 2010 to August 2026, constructed to mimic Nigerian realities such as subsidy removal and exchange rate dynamics, and evaluated in real time with rolling forecast origins. The headline results are summarised below.

POLICY APPLICATION	BENCHMARK	HEADLINE RESULT
Inflation forecasting at 1, 3 and 6 month horizons	**ARMA**	VAR and Lasso reduced one-month-ahead forecast errors by about 40 per cent; gains disappeared at the six-month horizon, where relative RMSE approached one.
Quarterly GDP nowcasting from monthly indicators (unrestricted MIDAS)	**AR(1)**	Root mean square error fell from 1.24 to 0.87 percentage points, an improvement of roughly 30 per cent.
Early warning of currency stress (depreciation above 5 per cent within three months)	**Logit**	Logit attained an AUC of about 0.55 to 0.57; random forest flagged 5 of 17 stress months with 7 false alarms. Both models attributed stress to oil prices and reserves rather than policy reform.

Table 1. Results of the Workshop 2 policy applications. All estimates derive from simulated training data and are illustrative of method, not official forecasts.

3.9 The Workshop concluded that machine learning is not automatically superior: simple benchmarks such as ARMA, random walk and logit remain difficult to beat, negative results should be reported, and a model that cannot outperform a random walk has no place in policy. The early warning exercise illustrated the Lucas critique in practice, since models trained on past episodes misattributed stress to oil prices and reserves when the true driver was policy reform. Results communicated to decision makers should state a central value, a plausible range, the principal drivers, the model's track record and the date of the next update, without jargon, unexplained precision or causal claims drawn from predictive models.

> KEY MESSAGE FROM WORKSHOP 2
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> *Prediction and causation are different questions. Machine learning earns its place in policy only when it is benchmarked honestly, built on trusted data, and explained in terms decision makers can act upon.*

4 ISSUES AND CHALLENGES

4.1 Participants identified the following issues and challenges as constraints on the effective application of modern modelling tools to policy in Nigeria and across Africa:

- **Data timeliness and revision.** Long release lags, particularly for GDP, and repeated revisions limit real-time analysis, while archives of past data vintages are not readily available to analysts.
- **Structural breaks and series comparability.** The 2014 and 2025 rebasing exercises, the 2023 exchange rate unification and subsidy removal render series before and after each event not directly comparable without official linking.

- **Data quality and access.** Analysts often depend on data outside their institutional control, and definitions differ between national and international sources.
- **Software and computational readiness.** Large installation files, version incompatibilities between MATLAB and Dynare, and the absence of preconfigured environments absorbed valuable training time.
- **Coding burden.** Manually coding structural models is tedious and error-prone, while relying on artificial intelligence for code generation raises verification and quality concerns.
- **Interpretability and governance.** Black-box models are difficult to explain to decision-makers, and policy models must meet standards of accuracy, explainability, reproducibility, and auditability.
- **Privacy and legal compliance.** Alternative data from mobile money and administrative records require a lawful basis under the Nigeria Data Protection Act 2023.
- **Time and depth of training.** The curriculum was too broad for the time available, and some modules could not be completed within the scheduled sessions.

5 RECOMMENDATIONS AND POLICY ACTIONS

For government and the national statistical system

5.1 The National Bureau of Statistics should publish officially linked back series for GDP and CPI across the 2014 and 2025 rebasing exercises, together with clear technical notes, to restore comparability for modelling and forecasting.

5.2 The NBS and the CBN should maintain and publish real-time data vintage archives and advance release calendars, enabling analysts to evaluate models against information available at each point in time.

5.3 Government should establish a national framework for the lawful, anonymised use of alternative data, including electronic payments, mobile money and satellite imagery, to strengthen nowcasting and the targeting of social transfers.

For policy institutions

5.4 The CBN, the Federal Ministry of Budget and Economic Planning and other policy institutions should adopt machine learning as a complement to their structural models, assigning causal questions to DSGE and CGE frameworks and predictive tasks to rigorously benchmarked machine learning tools.

5.5 Institutions should adopt a model governance standard requiring accuracy, explainability, reproducibility and auditability, including documented code, archived data, recorded package versions and routine reporting of performance against simple benchmarks.

5.6 Model outputs presented to decision makers should follow a standard reporting template stating the central estimate, a plausible range, the principal drivers, the model's track record and the date of the next update.

For NAMM

5.7 NAMM should advance the development of its in house hybrid DSGE and machine learning model for Nigeria, calibrated to African realities, as a shared public good for the modelling community.

5.8 NAMM should issue software requirements and preconfigured installation packages ahead of future workshops, standardise on tested software versions, and consider extending workshop duration to permit completion of the full curriculum and supervised practical exercises.

5.9 NAMM should institutionalise a structured mentoring and post-workshop support programme, including a repository of training scripts, datasets and recorded sessions, and should use participant feedback to refine the content of subsequent editions.

For analysts and researchers

5.10 Analysts should build reproducible, script-based data pipelines, save dated copies of every download, prevent data leakage, and plot target variables before modelling to detect breaks and errors.

5.11 Researchers should use artificial intelligence tools to accelerate coding while verifying every output against economic theory and statistical evidence, and should report negative as well as positive findings.

5.12 Participants should apply the workshop materials to a prediction problem within their own institutions, identifying the target variable, data sources, release lags, trust criteria and model risks, as assigned at the close of the workshops.

6 CONCLUSION AND APPRECIATION

6.1 Participants expressed appreciation to the facilitators, Prof. Philip O. Alege, Prof. Olusanya E. Olubusoye, Dr Dauda Musa and the NAMM technical team, for the depth, rigour and practical orientation of the sessions. Gratitude is also extended to the University of Ibadan, the Local Organising Committee and all partner institutions for hosting and supporting the workshops.

6.2 At the close of proceedings, the Secretary of the Local Organising Committee thanked participants for their commitment, noted the contribution of the pre-conference workshops to national modelling capacity over the past three years, and invited feedback from in-person and online participants to strengthen future editions.

6.3 Participants resolved that the knowledge acquired will be carried into the main Conference deliberations of 25 and 26 November 2026 and into the analytical work of their respective institutions, in pursuit of evidence-based policy for stability, accountability and inclusive development in Africa.

Issued at Ibadan, Nigeria, this 25th day of November 2026.



Rapporteur
Pre-conference Workshops, NAMM 2026