

Cross-Country Structural Fragility in Quarterly Real GDP Paths: A Regime-Sensitive Diagnostic Using IMF National Economic Accounts, 2005–2026

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Abstract: Quarterly real GDP is among the most widely used indicators of economic activity, yet cross-country policy and market assessments often rely on latest growth prints or pooled long-run averages that obscure regime change, drawdown depth, and the balance between adverse and stabilising tendencies in the growth path. This note applies a structural diagnostic—growth-pressure intensity, resilience capacity, failure and survival propensities, net structural health, and pre-critical early-warning—to year-on-year changes in constant-price quarterly real GDP for 99 economies, using the IMF Quarterly National Economic Accounts (QNEA) dataset. Panel results show mean pressure near 0.50, pre-critical conditions in about two-fifths of countries, and negative net structural health in about one-fifth. Economies at the high-pressure end of the distribution typically combine weak or negative mean growth in 2015–2020 with incomplete recovery amplitude thereafter; low-pressure economies combine higher positive growth shares with stronger post-2021 corridors. A static and linear reading that ranks countries only by latest year-on-year growth or by full-sample means systematically misorders structural risk relative to the regime-sensitive scores. Implications are drawn for international financial institutions, sovereign risk assessment, monetary and fiscal authorities, and cross-border investors. The note emphasises that activity-path diagnostics should be read jointly with external-buffer diagnostics where both are available.

Keywords: cross-country panel; quarterly GDP; structural break; growth regime; fragility; resilience capacity; IMF QNEA; pre-critical early-warning; sovereign risk

1. Introduction

National accounts statistics measure and analyse overall economic performance, including gross domestic product (GDP), consumption, investment, government spending, and foreign trade (IMF, 2026). The IMF Quarterly National Economic Accounts (QNEA) dataset disseminates quarterly estimates on both seasonally adjusted and non-

seasonally adjusted bases for a wide range of economies, supporting policy formulation, forecasting, benchmarking, and international comparison (IMF, 2026; United Nations et al., 2009).

In practice, cross-country commentary often compresses this information into a single growth rate—the latest year-on-year print—or into a long-run average. Such summaries are convenient but structurally incomplete when growth processes have shifted regimes, when negative quarters cluster in identifiable stress intervals, or when recovery fails to restore prior amplitude (Hamilton, 1989; Diebold & Rudebusch, 1996). Structural diagnostics that distinguish pressure from resilience capacity, and failure-oriented from survival-oriented propensities, offer a more decision-relevant description of the growth path than the mean alone (Taleb, 2012; Apanisile, 2026).

This note reports a multi-country application of such a diagnostic to constant-price quarterly real GDP for 99 economies. It documents the cross-sectional distribution of structural scores, highlights economies at the fragile and resilient tails, situates selected large and emerging economies—including Nigeria—within the panel, and contrasts structural rankings with a static and linear reading of the same data. Recommendations address international institutions, sovereign risk actors, national authorities, and investors.

2. Statement of the Problem

Despite the richness of quarterly national accounts, decision-makers still lack a compact, comparable structural score of growth-path fragility across countries that: (i) respects regime intervals rather than pooling all history into one mean; (ii) quantifies pressure relative to resilience; (iii) flags pre-critical conditions when failure-oriented propensity is elevated; and (iv) can be read alongside external-buffer indicators. Latest-print rankings and full-sample averages continue to understate differences between economies that have restored high-growth corridors and those that remain in modest or fragile recovery. The result is a recurrent gap between growth assumptions embedded in surveillance, debt sustainability, and investment frameworks and the growth capacity that recent paths actually support.

This gap is especially costly in cross-country settings. Official league tables and investor heat maps that sort economies by the latest year-on-year print implicitly treat each print as equally informative about capacity. In reality, a 3 per cent print after a deep multi-year scar does not carry the same structural meaning as a 3 per cent print inside a long high-build regime. Without a comparable structural score, institutions systematically misallocate attention across the membership or the investable universe.

The problem is therefore not the absence of quarterly GDP data. The IMF QNEA and national sources already provide those data. The problem is the absence of a standardised

structural translation that is simple enough for dashboards yet disciplined enough to respect regime change.

3. Aim, Objectives, and Research Questions

The aim is to provide a cross-country structural diagnosis of quarterly real GDP paths using IMF QNEA data and to derive decision-relevant implications for surveillance and risk assessment.

Objectives:

- Construct year-on-year growth paths from constant-price quarterly real GDP for all economies with sufficient history in QNEA.
- Apply a structural diagnostic (pressure, resilience, propensities, net health, pre-critical flag) on a comparable basis.
- Characterise the panel distribution and identify high-pressure and high-resilience tails.
- Contrast structural rankings with static/linear summaries of the same series.
- Formulate recommendations for international, national, and market stakeholders.

Research questions:

RQ1: How are growth-pressure intensity and resilience capacity distributed across economies in the QNEA panel?

RQ2: Which economies exhibit pre-critical conditions, and what regime features characterise them?

RQ3: How does a structural ranking differ from a ranking based on latest or average year-on-year growth alone?

RQ4: What surveillance and risk-management implications follow from treating growth as regime-dependent across countries?

4. Literature and Conceptual Framing

4.1 National accounts and cross-country comparison

The System of National Accounts provides the conceptual framework for GDP and related aggregates (United Nations et al., 2009). Quarterly accounts improve the timeliness of activity measurement relative to annual data and are central to nowcasting and policy monitoring (IMF, 2026). Cross-country use requires attention to base years, chain-linking, seasonal adjustment, and territorial breaks—features documented in QNEA metadata and varying by economy.

4.2 Regime shifts, fragility, and static pooling

Regime-switching and business-cycle research establishes that macroeconomic series may alternate between distinct data-generating processes (Hamilton, 1989; Ang & Bekaert, 2002). Resilience and fragility concepts distinguish absorption capacity from

disproportionate harm under stress (Briguglio et al., 2009; Taleb, 2012). Static assessments treat structure as fixed and linear and then layer averages or probability statements on mixed history; when regimes have shifted, such pooling misstates current structural risk (Apanisile, 2026). A pre-probabilistic structural reading infers pressure and resilience from path configuration—regime means, negative-outcome shares, recovery amplitude—before forcing a single predictive distribution.

4.3 Empirical motivation

The 2008–09 global financial crisis, the 2014–16 commodity shock, and the 2020 pandemic produced heterogeneous growth scars across advanced, emerging, and developing economies (IMF, 2021; World Bank, 2022). Some economies recovered prior growth amplitude quickly; others remain in lower corridors. A comparable structural score across the QNEA universe helps separate these cases without requiring a full multi-country Markov-switching estimation for every jurisdiction.

Related empirical work on economic vulnerability indices has long sought comparable cross-country metrics of exposure and resilience (Briguglio et al., 2009). This note is narrower: it scores the growth path itself, not a broad basket of structural vulnerabilities. Its advantage is tight linkage to a single, widely reported object—quarterly real GDP—and therefore easy integration into existing surveillance templates that already open with growth tables.

The Changification critique of static pooling (Apanisile, 2026) supplies the methodological warrant: when the data-generating process has shifted, averages estimated on mixed history are not neutral summaries. They are weighted by the very regime mix that policy needs to disentangle. Applying that critique at panel scale is the analytical task of this note.

5. Data and Methodology

5.1 Data

The source is the IMF Quarterly National Economic Accounts dataset (IMF.STA:QNEA), which provides quarterly measurements of GDP and expenditure components for a wide range of countries (IMF, 2026). The primary series for each economy is constant-price gross domestic product, not seasonally adjusted, in domestic currency units (series pattern B1GQ.Q.NSA.XDC.Q). Year-on-year percentage changes are computed using four-quarter lags. Economies with fewer than twenty usable year-on-year observations are excluded from scoring. The resulting panel covers 99 economies. Metadata note that compilation methods, base years, and territorial coverage differ by country; results should be interpreted as structural readings of published paths, not as claims of perfect cross-country accounting identity.

5.2 Diagnostic dimensions

For each economy, the diagnostic characterises the year-on-year growth path along dimensions oriented to decision use rather than one-step-ahead forecasting:

- **Growth-pressure intensity** — stress from negative-outcome share, drawdown depth in the level path, weakness in the 2015–2020 interval, and volatility.
- **Resilience capacity** — strength of the 2021–2026 corridor, share of positive outcomes, and recovery relative to the stress interval.
- **Failure-oriented propensity** — structural tendency toward contraction or prolonged underperformance.
- **Survival-oriented propensity** — structural tendency toward stabilisation and continuation.
- **Thriving-oriented propensity** — structural tendency toward robust, high-amplitude growth.
- **Net structural health** — survival-oriented minus failure-oriented propensity.
- **Pre-critical early-warning** — flag when failure propensity is near or above a conventional threshold and/or pressure is already elevated.

Regime windows used for interpretation are 2005–2014 (pre-stress reference where available), 2015–2020 (commodity and pandemic stress cluster), and 2021–2026 (post-shock corridor). Proprietary internal scoring weights are not disclosed; reported indices are normalised scores suitable for cross-country comparison and communication. Threshold language (for example, pressure near 0.55 and failure propensity near 0.50) follows decision conventions rather than universal constants.

Operationally, each country score uses the same feature families: the share of negative year-on-year quarters; the depth of peak-to-trough drawdown in the level series; mean growth in the 2015–2020 window; volatility of year-on-year growth; mean growth in the 2021–2026 window; and the share of strong positive quarters. These features are combined into normalised pressure and resilience indices and then into propensity scores that sum to one. Pre-critical status is assigned when failure-oriented propensity reaches a conventional decision threshold or when pressure is already in an elevated band.

Because quarterly histories differ in length, the effective information set is not identical across countries. Economies with longer series contribute more pre-2015 information to the contrast with later regimes; economies with shorter series rely more heavily on post-2010 behaviour. This asymmetry is unavoidable in an unbalanced global panel and is preferred to discarding shorter series entirely.

5.3 Static and linear comparator

For contrast, each economy can also be summarised by its latest year-on-year print and by its full-sample mean growth rate—the quantities that dominate dashboards and

league tables. Section 7 shows how those static summaries misalign with structural pressure and net health rankings.

6. Panel Results

6.1 Distributional overview

Across 99 scored economies, mean growth-pressure intensity is approximately 0.50. About 40 per cent of economies trigger the pre-critical early-warning condition, and about 22 per cent record negative net structural health. These shares indicate that structural fragility in quarterly real GDP paths is not confined to a handful of crisis states; it is a material minority—and for pre-critical status, a large minority—of the QNEA sample.

6.2 High-pressure tail

Economies at the top of the pressure ranking typically combine one or more of: negative or near-zero mean year-on-year growth in 2015–2020; elevated shares of negative quarters; deep peak-to-trough drawdowns in real GDP levels; and limited thriving propensity in the post-2021 corridor. Illustrative high-pressure cases in the panel include small open and tourism-exposed economies (for example, Bahamas, St. Lucia, Trinidad and Tobago), commodity- and finance-stressed emerging markets (for example, Argentina, Bolivia), and conflict- or shock-affected economies (for example, Ukraine). Greece and several Central and Eastern European economies also appear with elevated pressure relative to the panel centre, consistent with scarred post-crisis recovery paths.

Country	Pressure	Resil.	P(F)	Net	Pre-crit.	YoY 15–20	YoY 21–26
Bahamas, The	0.85	0.73	0.55	-0.11	Y	-2.4	9.3
Bolivia	0.85	0.68	0.56	-0.15	Y	-2.7	3.5
Trinidad and Tobago	0.82	0.35	0.70	-0.42	Y	-3.7	0.7
St. Lucia	0.82	0.72	0.54	-0.10	Y	-1.6	11.2
Argentina	0.77	0.64	0.56	-0.13	Y	-1.7	3.5
Ukraine	0.77	0.23	0.72	-0.52	Y	-0.4	-2.6
St. Vincent and the Grenadin	0.72	0.27	0.65	-0.42	Y	0.7	0.1
Greece	0.69	0.67	0.52	-0.06	Y	-0.3	4.0
Lesotho, Kingdom	0.68	0.55	0.56	-0.14	Y	-0.9	2.3

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Belarus, Republic of	0.67	0.77	0.48	0.02	Y	9.5	12.5
Botswana	0.67	0.68	0.51	-0.03	Y	0.9	3.8
Moldova, Republic of	0.67	0.53	0.56	-0.15	Y	1.3	2.6
Sri Lanka	0.66	0.44	0.54	-0.21	Y	8.7	1.1
Latvia, Republic of	0.66	0.48	0.57	-0.19	Y	2.0	2.1
Russian Federation	0.65	0.63	0.52	-0.05	Y	0.5	2.8

Table 1. Fifteen economies with highest growth-pressure intensity (RPLA v15 on IMF QNEA real GDP YoY).

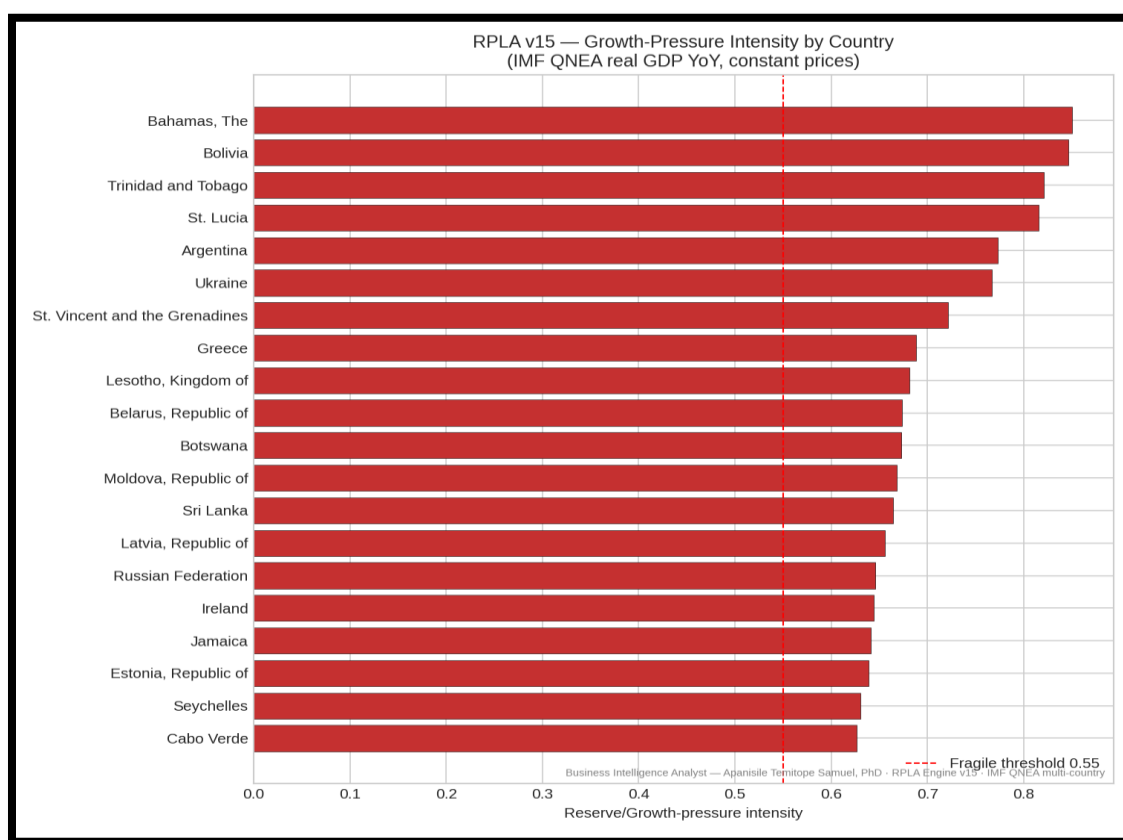


Figure 1. Growth-pressure intensity — twenty highest-pressure economies in the QNEA panel.

6.3 Pressure versus resilience

A scatter of pressure against resilience capacity shows that high pressure does not always coincide with low resilience: some economies combine elevated stress history with meaningful post-2021 rebound (higher resilience scores despite high pressure). Others combine high pressure with weak resilience—the most concerning quadrant for surveillance. Conversely, a cluster of economies exhibits low-to-moderate pressure and high resilience, including several large emerging markets with sustained positive corridors.

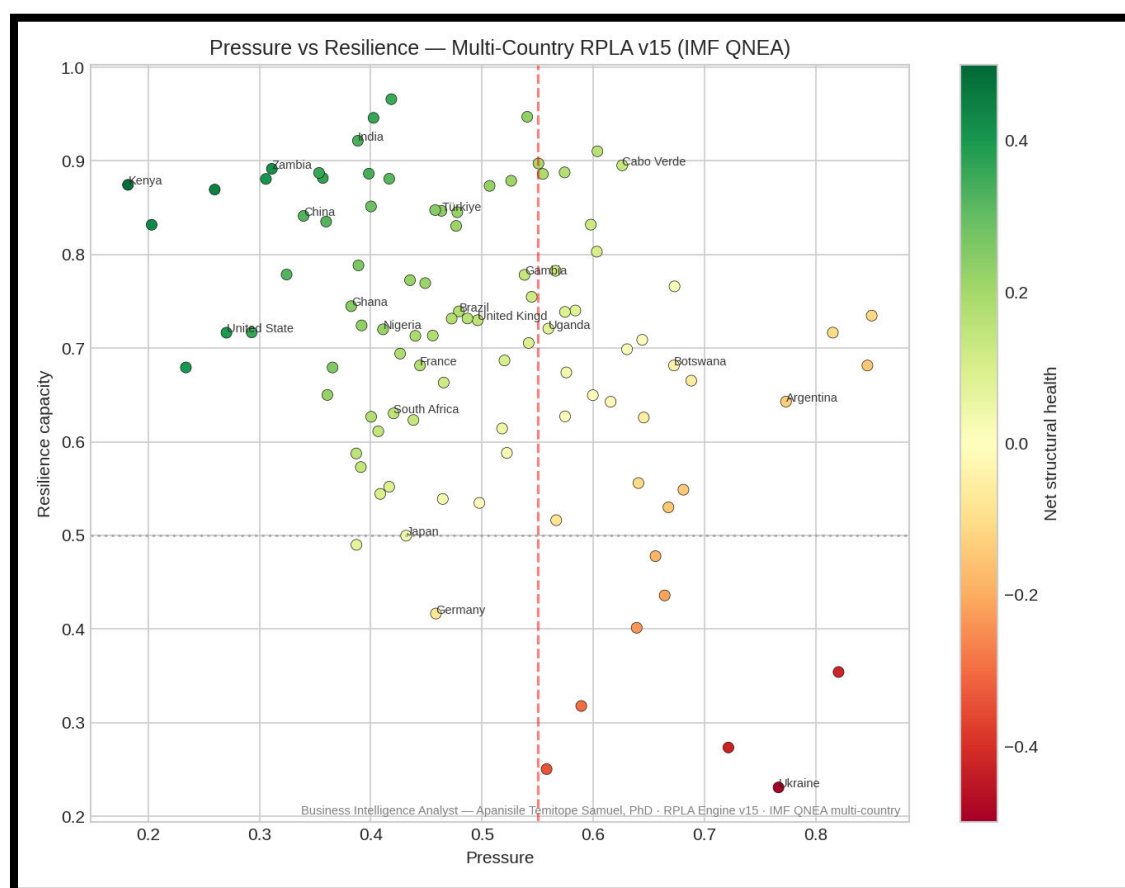


Figure 2. Pressure versus resilience capacity across the panel (colour: net structural health).

6.4 Selected economies in comparative context

Within the panel, Nigeria records moderate pressure (approximately 0.41), relatively solid resilience (approximately 0.72), failure propensity below threshold (approximately 0.35), positive net structural health (approximately +0.22), and no pre-critical flag. Its mean year-on-year growth rises from about 0.7 per cent in 2015–2020 to about 3.2 per cent in 2021–2026—clear recovery relative to the stress interval, but not a return to the higher pre-2015 amplitude observed in longer annual datasets. South Africa sits near moderate

pressure with positive net health; Ghana and Kenya show lower pressure and stronger resilience on this quarterly metric. Among large economies, the United States and China show moderate-to-low pressure and positive net health; the United Kingdom sits near the panel mean for pressure; Germany and Japan show tighter post-pandemic corridors and, in some score configurations, elevated pre-critical flags driven by weak recent amplitude rather than deep negative-quarter shares alone.

Ukraine illustrates the opposite tail: very high pressure, low resilience, failure propensity well above threshold, and strongly negative net structural health—consistent with a path dominated by conflict-related contraction and incomplete recovery in the available quarterly data. Argentina combines high pressure with only partial offsetting resilience, remaining pre-critical on the decision rule used here.

Country	Pressure	Resil.	P(F)	Net	Pre-crit.	YoY 15–20	YoY 21–26
Nigeria	0.41	0.72	0.35	0.22	N	0.7	3.2
South Africa	0.42	0.63	0.39	0.15	N	-0.1	2.0
Ghana	0.38	0.74	0.31	0.24	N	4.6	4.4
Kenya	0.18	0.87	0.14	0.48	N	4.0	5.6
United States	0.27	0.72	0.27	0.39	N	1.9	3.3
United Kingdom	0.50	0.73	0.42	0.15	N	0.4	3.3
China, People's Republic of	0.34	0.84	0.25	0.32	N	5.9	5.8
India	0.39	0.92	0.28	0.33	N	4.9	8.2
Brazil	0.48	0.74	0.40	0.17	N	-1.0	3.3
Türkiye, Republic of	0.46	0.85	0.35	0.24	N	3.8	5.8
Ukraine	0.77	0.23	0.72	-0.52	Y	-0.4	-2.6
Argentina	0.77	0.64	0.56	-0.13	Y	-1.7	3.5
Germany	0.46	0.42	0.48	-0.07	Y	0.9	0.9
France	0.44	0.68	0.40	0.17	N	0.2	2.7
Japan	0.43	0.50	0.45	0.03	Y	0.1	1.3
Botswana	0.67	0.68	0.51	-0.03	Y	0.9	3.8
Uganda	0.56	0.72	0.43	0.08	Y	5.8	5.4
Zambia	0.31	0.89	0.25	0.41	N	2.4	5.1

Table 2. Selected economies — structural scores and regime mean YoY growth (IMF QNEA).

6.5 Nigeria-specific path visuals

For illustration of the underlying national path that feeds the panel score, Figures 3–6 display Nigeria's constant-price quarterly real GDP level, year-on-year change, diagnostic overview, and regime means. These national charts are consistent with Nigeria's mid-panel pressure rank: a visible 2015–2020 scar, followed by a modest but steady positive corridor near 3 per cent year-on-year.

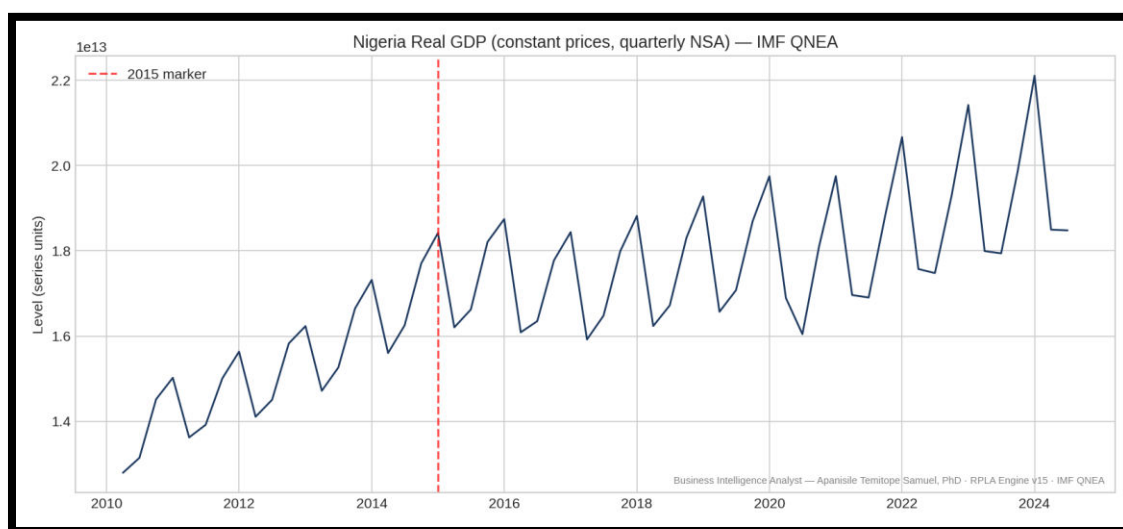


Figure 3. Nigeria — quarterly real GDP level (IMF QNEA).

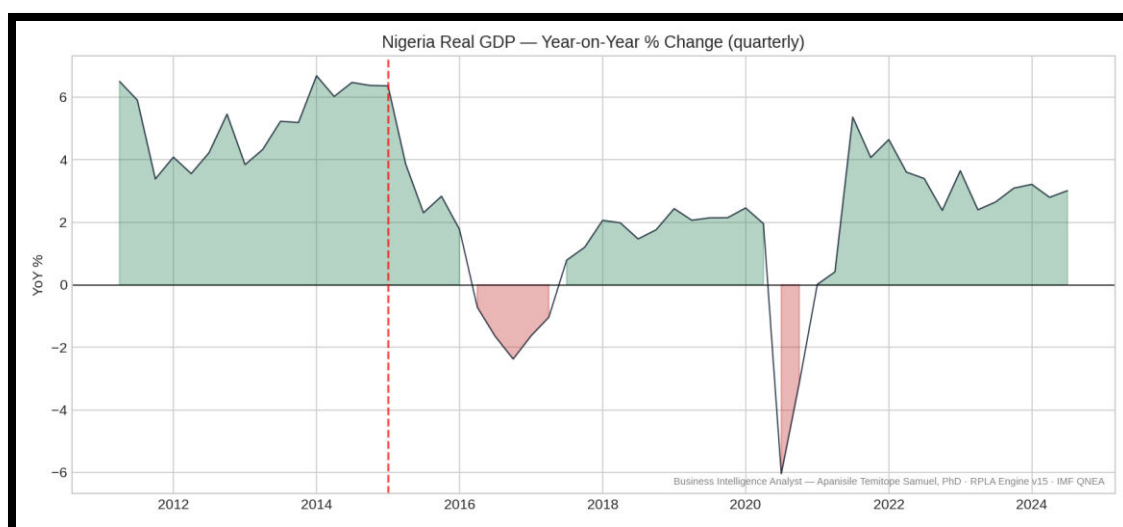


Figure 4. Nigeria — year-on-year % change in real GDP.

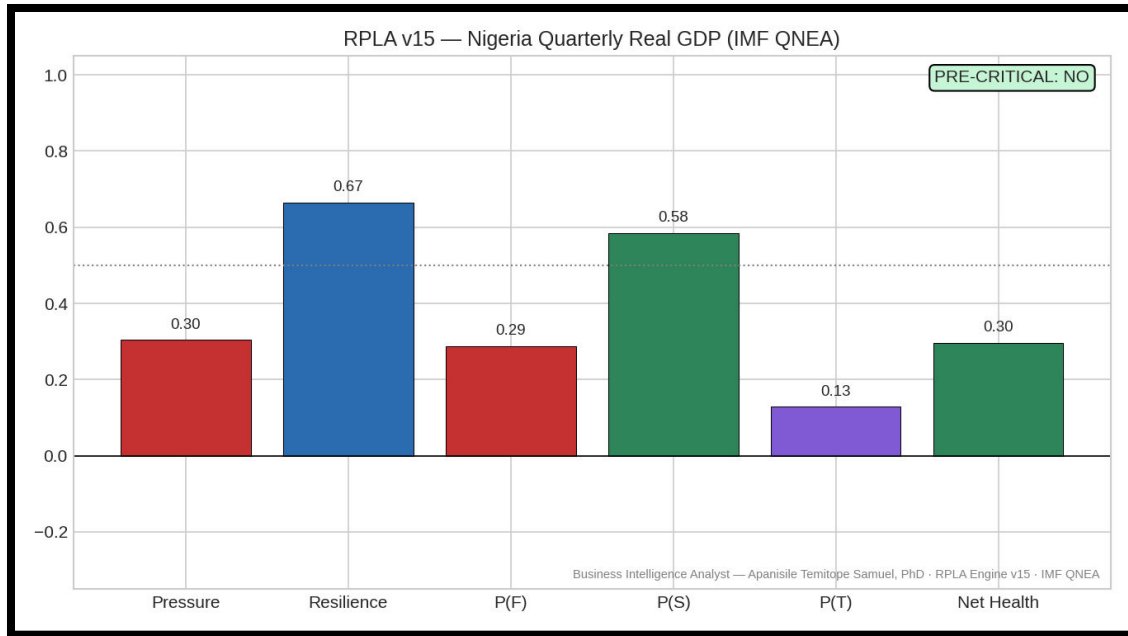


Figure 5. Nigeria — RPLA v15 diagnostic overview.

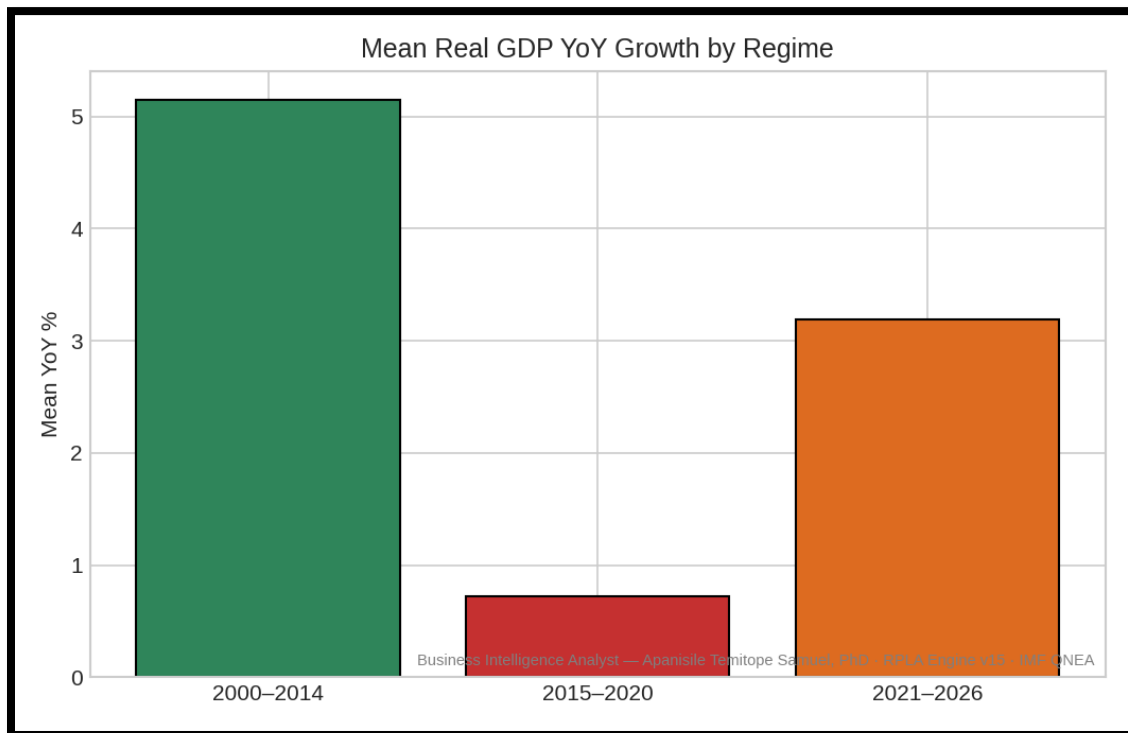


Figure 6. Nigeria — mean YoY growth by regime interval.

7. Static and Linear Reading versus Structural Diagnosis

A static reading treats each economy's growth process as a single structure summarised by full-sample mean year-on-year growth. A linear reading treats negative

quarters as temporary noise around that mean and ranks economies by the latest print or by the average. Both are arithmetically natural; both mis-order structural risk when regimes have shifted.

Table 3 illustrates the contrast conceptually for the panel as a whole.

Dimension	Static / linear panel reading	Structural panel reading
Headline ranking	Latest YoY or full-sample mean YoY	Pressure, resilience, P(F), net health
2015–2020 stress	Averaged away into long-run mean	Explicit regime window; raises pressure
Post-2021 recovery	Counted as 'back to normal' if positive	Tested for amplitude vs prior regime
Cross-country triage	High latest growth = low risk	High pressure / pre-critical = priority watch
Nigeria example	Recent ~3% YoY looks adequate	Moderate pressure; corridor $\neq$ pre-2015
Ukraine example	Latest prints noisy / negative	Aligned: extreme pressure, net health deep negative
Policy use	League tables of growth rates	Regime-conditional surveillance and DSA inputs

Table 3. Static/linear versus structural reading of the same QNEA growth paths.

Empirically, economies with similar latest year-on-year growth can sit far apart on pressure and net health, depending on the depth of the 2015–2020 scar and the quality of post-2021 recovery. Conversely, some high-pressure economies may post occasional strong quarterly rebounds that look favourable in a latest-print ranking while remaining pre-critical on structural grounds. Surveillance systems that rely only on static league tables will therefore both over-reassure and over-alarm relative to a regime-sensitive screen (Hamilton, 1989; Apanisile, 2026).

8. Discussion

Three implications follow. First, structural fragility in quarterly real GDP is widespread enough—about two-fifths of the panel on the pre-critical rule used here—that cross-country surveillance should treat regime quality as a standard object, not as a narrative accessory to the latest print. Second, national rankings for investment and programme design should not equate 'positive year-on-year growth' with 'restored capacity'; amplitude and negative-quarter history matter. Third, activity-path diagnostics are complementary to, not substitutes for, external-buffer diagnostics: an economy may

show moderate growth-path pressure while exhibiting elevated reserve-path pressure, or the reverse (IMF, 2013; IMF, 2022).

Limits are important. Quarterly GDP series differ in length, base year, chain-linking, and seasonal treatment; some country scores rest on shorter histories than others. The diagnostic is a transparent structural screen, not a structural VAR or official debt-sustainability model. Thresholds are decision conventions. Nonetheless, the ordinal message—who sits in the high-pressure tail, who combines stress history with weak recovery, who has restored a robust corridor—is robust enough for triage and for motivating deeper country work.

The discussion also clarifies what the panel does not say. It does not say that high-pressure economies cannot grow next year; several will. It does not say that low-pressure economies are immune to new shocks. It says that the configuration of the observed path differs in ways that matter for planning assumptions, for the credibility of multi-year commitments, and for the allocation of scarce surveillance attention.

Read jointly with reserves and external-debt indicators, the panel helps identify mismatched pairs: economies with calm activity paths but fragile buffers, and economies with stressed activity paths but still-adequate liquidity. Those mismatches are often more actionable than either indicator alone.

Finally, the static-versus-structural contrast in section 7 is not an argument against publishing latest growth rates. Latest rates remain essential for nowcasting and communication. The argument is that they are an incomplete sufficient statistic for structural capacity—and that the incompleteness is measurable at panel scale.

9. Recommendations

9.1 International Monetary Fund, World Bank, and regional development banks

Incorporate regime-sensitive growth-path scores into surveillance dashboards alongside latest year-on-year GDP. For pre-critical and high-pressure economies, require explicit discussion of recovery amplitude versus pre-stress regimes in Article IV and programme documents. Pair QNEA activity diagnostics with international reserves and external-liquidity indicators when both exist. Avoid programme growth anchors that implicitly restore pre-2015 means without evidence from the post-2020 corridor.

9.2 Sovereign credit analysts and rating agencies

Supplement growth-rate league tables with pressure, net health, and pre-critical flags. Distinguish economies with similar current growth but different scar depth. Treat repeated negative-quarter regimes as structural information, not only as historical colour.

9.3 National fiscal and monetary authorities

Publish regime-conditional medium-term baselines (stress, modest recovery, high build) rather than a single optimistic mean. For economies in the high-pressure tail,

prioritise policies that raise resilience capacity—buffer rebuilding, credible macro frameworks, and reduced output volatility—over narratives of automatic mean reversion. For economies with moderate pressure and positive net health (including Nigeria on this quarterly metric), avoid complacency: moderate activity-path scores do not eliminate external-buffer or inflation constraints.

In practical terms, ministries of finance should maintain at least two published growth corridors in medium-term frameworks: a central corridor consistent with the post-2021 mean, and a downside corridor consistent with the 2015–2020 experience. Debt strategies should be tested against both. Central banks should interpret output-gap and reaction-function uncertainty through the same dual-corridor lens rather than through a single smoothed historical mean.

Where the panel flags pre-critical status, authorities should treat the flag as a prompt for policy review within one budget and monetary cycle—not as a prediction of imminent recession, but as evidence that the growth path's adverse propensity is already elevated relative to peers.

9.4 Cross-border investors and lenders

Use structural ranks as a screen for deeper due diligence, not as a mechanical trade signal. Favour exposures in economies where recovery amplitude is documented, not only where the latest print is high. In high-pressure pre-critical jurisdictions, shorten horizon, increase contingency, and align instrument choice with downside growth bands.

9.5 Statistical agencies

Continue to improve quarterly GDP timeliness, seasonal adjustment transparency, and metadata on territorial and methodological breaks so that cross-country structural screens rest on clearer foundations (United Nations et al., 2009; IMF, 2026).

10. Conclusion

Using IMF Quarterly National Economic Accounts data for 99 economies, this note has applied a regime-sensitive structural diagnostic to year-on-year real GDP growth paths. Mean pressure is about 0.50; pre-critical conditions appear in about two-fifths of the panel; negative net structural health appears in about one-fifth. High-pressure economies are characterised by stress-interval weakness and incomplete recovery amplitude; low-pressure economies by sustained positive corridors and stronger resilience capacity. Static rankings by latest or average growth mis-order these risks.

The practical implication is straightforward: cross-country surveillance, sovereign risk assessment, and national medium-term frameworks should treat growth as regime-dependent and should report pressure, resilience, and early-warning status alongside conventional growth rates. Future work should integrate quarterly activity-path scores

with reserves, inflation, and external-debt indicators in a joint structural dashboard, and should test sensitivity to alternative regime windows and seasonal-adjustment choices.

A second extension is regional deep dives—Africa, Latin America, Europe, and small island developing states—where common shock structures may justify pooled interpretation while retaining country-level scores. A third extension is temporal updating: as new QNEA vintages arrive, the panel can be refreshed so that pre-critical entries and exits become part of routine surveillance, much as debt-distress lists are updated over time.

In closing, the multi-country evidence reinforces a simple claim: growth is regime-dependent, the dependence is visible in public quarterly data, and institutions that continue to rely only on static averages will misread capacity in a material share of the world's economies.

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Data appendix

Primary data: International Monetary Fund, National Economic Accounts (NEA), Quarterly (dataset IMF.STA:QNEA). Series pattern analysed: B1GQ.Q.NSA.XDC.Q (real GDP, constant prices, not seasonally adjusted, domestic currency). Panel CSV of country scores deposited with the working files as multi_country_rpla_panel.csv. All structural scores are author calculations based on publicly available IMF series.