

IFG Progress Digest

Has the Relationship Between Indonesia's GDP and the Real Economy Changed Since 2025?

Evidence from Rolling Regression Analysis

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- *A divergence emerges around 2025Q2: GDP becomes less aligned with manufacturing, nominal wages, and tax revenue.*
- *The divergence is not economy-wide: GDP relationships with money supply and commercial bank credit remain broadly intact.*
- *This is a warning signal, not evidence of GDP mismeasurement: the unusual break in historical relationships warrants deeper empirical investigation.*

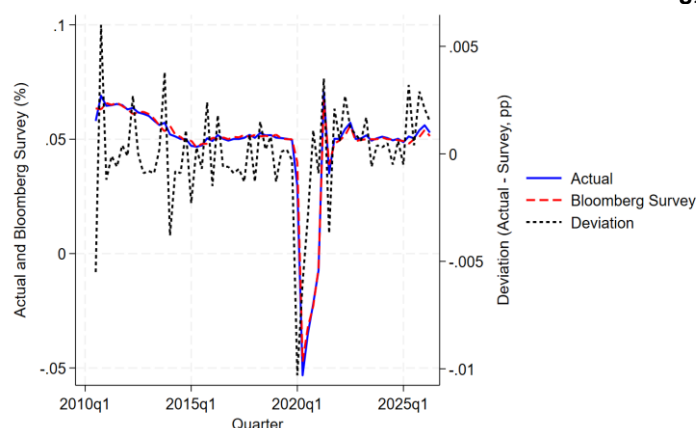
¹ *This analysis represents the author's personal views and is intended solely as an empirical exercise to stimulate discussion and further research on the stability of historical relationships between Indonesia's GDP and selected economic indicators. Any interpretations or conclusions presented in this report remain preliminary and should not be construed as evidence that Indonesia's GDP is overstated or mismeasured. Rather, the findings highlight a divergence that merits further empirical investigation using additional data and alternative methodologies.*

Indonesia's GDP for 2026Q2 was recently released, once again showing resilient economic growth despite heightened global uncertainty and geopolitical tensions. The official figures suggest that Indonesia continues to maintain stable economic performance.

At the same time, however, public discussion increasingly reflects a different perception: although headline GDP growth remains relatively stable, many argue that the improvement is not yet being fully reflected in business conditions or the broader real economy.

Although deviations between actual GDP growth and the Bloomberg consensus occur throughout the sample period, a distinct pattern emerges from 2025Q2 onward. A t-test comparing the periods before and after 2025Q2 shows that, after this breakpoint, actual GDP growth is significantly higher than the Bloomberg consensus forecast.

Exhibit 1. Actual and Consensus GDP Growth — Bloomberg, 2010 - 2026



Sources: Bloomberg, IFGP Research

A two-sample t-test indicates that the average deviation between actual GDP growth and Bloomberg consensus forecasts increased significantly after 2025Q2. Before 2025Q2, the mean deviation was statistically indistinguishable from zero (-0.024 percentage points), whereas from 2025Q2 onward it rose to approximately 0.20 percentage points. The difference in means is statistically significant at the 5% level ($t = -2.08$, $p = 0.042$).

This naturally raises an empirical question:

Has the historical relationship between GDP and real-sector activity remained unchanged?

Three groups of variables are employed to capture the main drivers of economic activity: aggregate demand, aggregate supply, government activity and monetary policy variables. Aggregate demand is proxied by Bank Indonesia's Prompt Manufacturing Investment data, aggregate supply is represented by wage indicators, while tax revenue serves as a proxy for government activity. Monetary variables are assessed with money supply and commercial bank credit. These variables are examined to assess whether changes in the underlying economy coincide with GDP

Methodology

To investigate this question, we examine the relationship between GDP and five sets of variables across three economic dimensions:

Table 1. Variables and Dimensions Examined

Test	Dimension	Indicator
Test 1	Aggregate Demand	Manufacturing investment (Bank Indonesia Prompt Manufacturing Index)
Test 2	Aggregate Supply	Nominal wage dynamics
Test 3	Government Activity	Tax revenue
Test 4	Monetary Policy	Money supply (M2)
Test 5	Monetary Policy	Commercial bank credit

A conventional regression estimates a single coefficient using the entire sample (2014–2026), implicitly if the relationship between GDP and other variables has remained constant throughout the period. This assumption may not hold if the economy has undergone structural changes.

Therefore, we employ rolling regression, which repeatedly estimates the same model using a moving estimation window (12, 16, 20, and 24 quarters). As the window moves forward one quarter at a time, the estimated coefficient evolves through time, allowing us to observe whether the relationship remains stable or changes.

Why Rolling Regression?

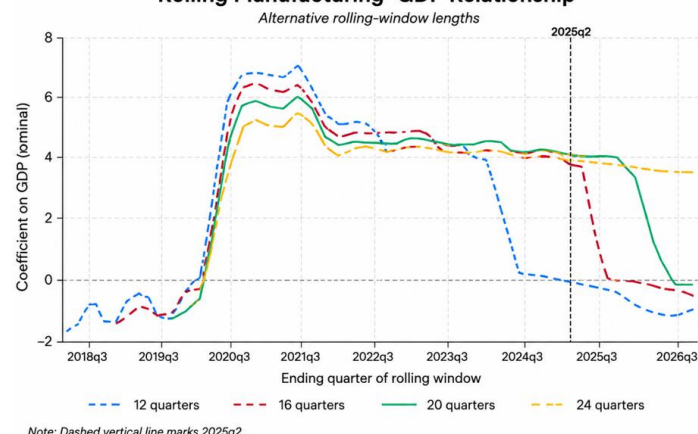
Our objective is not merely to determine whether GDP and these variables are correlated. Rather, we ask a more fundamental question: ***Has their historical relationship remained stable?***

If the estimated coefficient remains broadly constant across time, the historical relationship is stable. If the coefficient declines substantially and consistently across different rolling windows, this indicates that the relationship has weakened.

Results

Test 1: Rolling Regression of Manufacturing and GDP

Exhibit 2. Rolling Regression Coefficients: Manufacturing Growth vs. GDP Growth (12–24 Quarter Windows)



Sources: CEIC (Bank Indonesia), IFGP Research

The figure presents rolling estimates using four alternative window lengths (12, 16, 20, and 24 quarters). Three observations stand out.

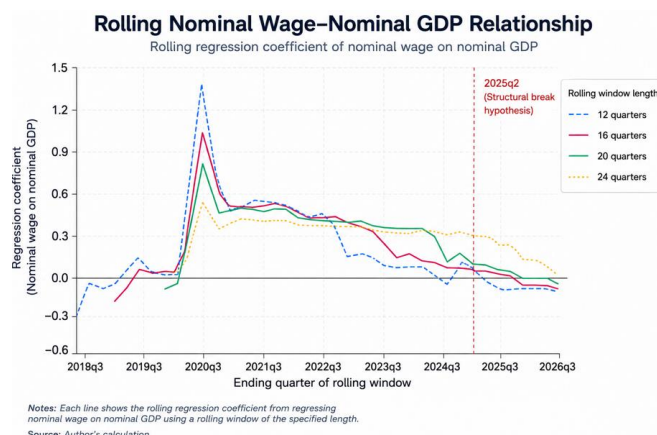
- First, from approximately 2021 to early 2025, all rolling windows indicate a consistently strong positive relationship between GDP growth and manufacturing growth. Periods of stronger GDP growth were generally accompanied by stronger manufacturing performance.
- Second, beginning around 2025Q2, the relationship weakens noticeably. The decline first appears in the shortest rolling window (12 quarters), followed sequentially by the 16-quarter and 20-quarter windows. This pattern is exactly what would be expected if recent observations are becoming increasingly inconsistent with the historical relationship.
- Third, the longer 24-quarter window remains relatively stable because it still contains more historical observations. This suggests that the divergence is concentrated in the most recent quarters rather than reflecting the entire sample.

The results indicate that recent GDP growth has become progressively less aligned with manufacturing-sector performance than in previous years. This finding alone does not demonstrate that Indonesia's GDP is overstated or mismeasured.

Test 2: Rolling Regression of Nominal Wages and GDP

Note: This analysis relies on quarterly wage data derived by interpolating annual wage observations. Results should therefore be interpreted with appropriate caution.

Exhibit 3. Rolling Regression Coefficients: Nominal Wage Growth vs. Nominal GDP Growth



Sources: CEIC, IFGP Research

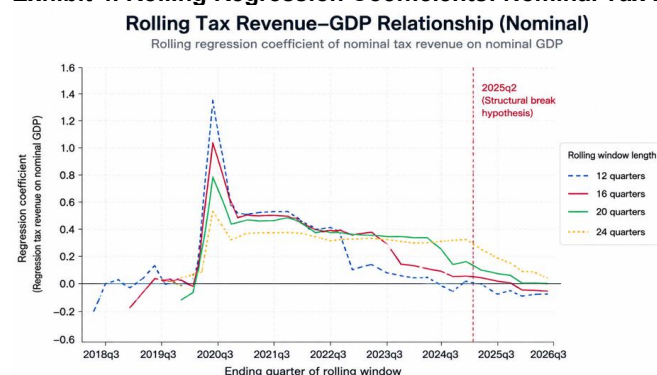
The rolling regression results indicate that the historical relationship between nominal wage growth and nominal GDP growth has weakened substantially over time. During the post-pandemic recovery, particularly throughout 2021–2023, the estimated coefficient remained consistently positive across all rolling window specifications, generally ranging between 0.3 and 0.5. This suggests that periods of stronger nominal GDP growth were typically accompanied by higher nominal wage growth, consistent with the expectation that expanding economic activity is transmitted to labor income.

Beginning in 2024, however, the estimated coefficient starts to decline across all rolling windows. By the time the rolling windows extend beyond 2025Q2, the coefficient has fallen close to zero regardless of the window length. This convergence suggests that the weakening relationship is not an artifact of a particular rolling-window specification but rather reflects a broad deterioration in the historical association between nominal wages and nominal GDP.

From an economic perspective, these findings imply that recent increases in nominal GDP have no longer been systematically associated with corresponding increases in nominal wages. Together with complementary evidence from the manufacturing–GDP and tax revenue–GDP analyses, the results are consistent with the hypothesis that the relationship between measured GDP growth and underlying real economic conditions has changed since around 2025.

Test 3: Rolling Regression of Tax Revenue and GDP

Exhibit 4. Rolling Regression Coefficients: Nominal Tax Revenue Growth vs. Nominal GDP Growth



Sources: CEIC (Ministry of Finance), IFGP Research

The rolling regression analysis shows that the responsiveness of nominal tax revenue to nominal GDP has changed considerably over the sample period. During the years immediately following the pandemic, nominal GDP and tax revenue exhibited a relatively strong and stable positive relationship. Across all rolling-window specifications, the estimated coefficient remained positive, indicating that periods of stronger economic expansion were generally associated with faster growth in government tax collections.

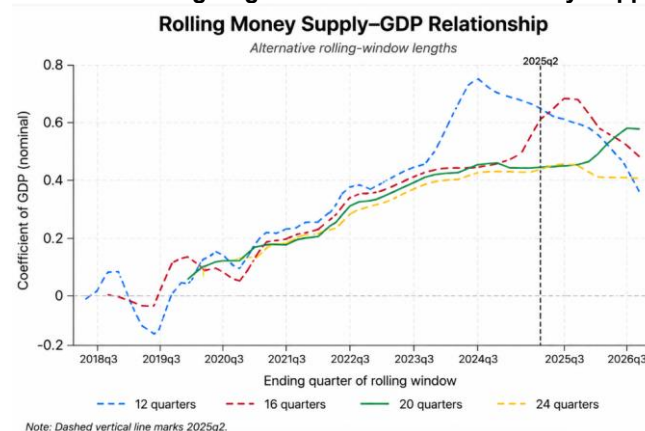
A noticeable shift emerges as more recent observations enter the rolling estimation windows. The 12-quarter specification is the first to capture the weakening relationship, followed sequentially by the 16-, 20-, and 24-quarter windows. By the end of the sample, however, all rolling windows converge toward coefficients close to zero, implying that nominal GDP growth has become a much weaker predictor of tax revenue growth than in previous years.

From a fiscal perspective, this result is particularly noteworthy because tax revenue represents one of the most direct observable outcomes of economic activity. Under relatively stable tax policies and compliance conditions, sustained growth in nominal GDP would normally be accompanied by a corresponding increase in the government's tax base and collections. The observed decoupling therefore suggests that the recent expansion in measured nominal GDP has not translated into fiscal revenue to the same extent as in earlier years.

Test 4: Rolling Regression of Money Supply and GDP

Unlike the preceding indicators, the relationship between money supply and nominal GDP does not follow the same pattern.

Exhibit 5. Rolling Regression Coefficients: Money Supply (M2) Growth vs. Nominal GDP Growth



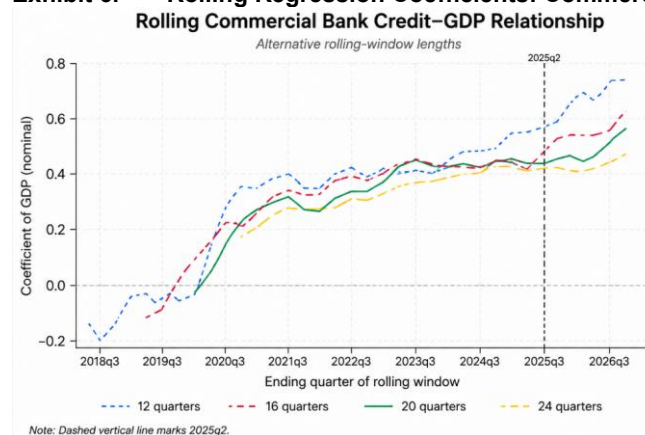
Sources: CEIC (Bank Indonesia), IFGP Research

The rolling-regression results indicate that the relationship between money supply and nominal GDP has generally strengthened over the observation period. Across all rolling-window specifications, the estimated GDP coefficient increased from around zero in the earlier period to approximately 0.4–0.5 in the more recent period.

Most importantly, there is no clear evidence of a broad structural breakdown in the money supply–GDP relationship around 2025Q2. Unlike the manufacturing–GDP relationship, where coefficients weaken substantially across several window specifications, the relationship between money supply and nominal GDP remains positive after 2025Q2, particularly under the longer-window specifications. The evidence therefore suggests that the apparent post-2025Q2 divergence is not uniform across macroeconomic indicators.

Test 5: Rolling Regression of Commercial Bank Credit and GDP

Exhibit 6. Rolling Regression Coefficients: Commercial Bank Credit Growth vs. Nominal GDP Growth



Sources: CEIC (Bank Indonesia), IFGP Research

The rolling-regression results show a clear and persistent positive relationship between commercial bank credit and nominal GDP, with the relationship strengthening over time. Across all four window specifications, the estimated coefficient rises from around zero or negative values in the early sample to roughly 0.4–0.5 by 2024–2025.

More importantly, there is no evidence of a weakening relationship around 2025Q2. Around the vertical line, the longer-window coefficients remain broadly stable at approximately 0.4–0.45. After 2025Q2, the shorter windows actually move upward, suggesting that the relationship between bank credit and nominal GDP has strengthened in the most recent observations.

Synthesis

Taken together, the five indicators reveal an important divergence. Manufacturing, nominal wages, and tax revenue show a weakening relationship with GDP beginning around 2025Q2, with their rolling coefficients declining toward zero. In contrast, money supply and commercial bank credit continue to exhibit positive relationships with nominal GDP, and the credit relationship appears to strengthen in the most recent observations.

More specifically, the results suggest a divergence between real/fiscal indicators and monetary-financial indicators. Measures more directly associated with production, labour income, and government revenue become less closely aligned with GDP, while monetary and credit aggregates remain comparatively well aligned with nominal GDP.

The conclusion should therefore be framed carefully: since around 2025Q2, the historical relationship between GDP and several underlying real-economy and fiscal indicators appears to have weakened, while its relationship with monetary and financial aggregates remains intact. The analysis does not establish why this divergence has emerged, but the contrast across indicators provides a stronger basis for investigating whether changes in economic structure, nominal dynamics, measurement, or other factors are responsible.

A useful way to read these results: since 2025Q2, Indonesia's economy appears to be running on two speeds. The financial engine, driven by credit expansion and monetary aggregates is still humming in sync with GDP. The real engine: factories, wages, tax receipts is running at a different pace. Because GDP measures the aggregate, the headline number looks stable even when producers, workers, and fiscal accounts tell a more mixed story. That gap between the two speeds is precisely what this analysis is designed to detect, and what warrants further investigation.

Table 2. Summary

Test	Indicator	Relationship Before 2025Q2	Relationship After 2025Q2	Overall Assessment
Test 1	Manufacturing	Strong and positive	Declines toward zero	Relationship weakened
Test 2	Nominal wages	Moderate and positive	Declines toward zero	Relationship weakened
Test 3	Tax revenue	Strong and positive	Declines toward zero	Relationship weakened
Test 4	Money supply	Positive and strengthening	Remains positive; mixed across shorter windows	Relationship broadly maintained
Test 5	Commercial bank credit	Positive and relatively stable	Remains positive and strengthens	Relationship maintained/strengthened

Key Takeaways

- GDP is growing. But factories, workers, and the government's tax receipts are not keeping pace.** Rolling regressions across manufacturing activity, nominal wages, and tax revenue all show the same pattern: their historically stable relationships with GDP weaken substantially after 2025Q2. In contrast, money supply and bank credit remain aligned, with credit continuing to strengthen. This is not a story of GDP mismeasurement. It is a story of which parts of the economy GDP growth is reflecting and which it is not.
- The findings should not be interpreted as evidence of GDP mismeasurement.** The analysis identifies changes in historical statistical relationships but cannot determine their cause. Potential explanations include structural transformation toward services, post-pandemic adjustments, changes in tax compliance, shifts in wage-setting behaviour, or changes in the representativeness of selected indicators.
- Broader empirical scrutiny is warranted.** The simultaneous weakening of GDP relationships with manufacturing, wages, and tax revenue provides sufficient motivation for an expanded validation exercise using independent indicators such as industrial electricity consumption, freight activity, cement sales, capital-goods imports, manufacturing exports, retail activity, and employment.
- Formal structural-break testing should be the next methodological step.** Rolling regressions identify when relationships appear to change but do not by themselves establish a statistically significant structural break. The analysis should therefore be complemented by Chow breakpoint tests, Bai–Perron multiple-break tests, and CUSUM or recursive-residual tests to allow the data to identify breakpoints endogenously and assess parameter stability over time.

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