

SPECIAL RESEARCH REPORT | GANRAP ANALYSIS

Gold Is a Better Stabiliser of Ghana's Inflation Than Oil

New econometric research maps the transmission channels linking gold prices, the exchange rate and domestic inflation, and the findings challenge conventional wisdom about what drives the cost of living in Ghana.

By **Charis Joshua Debrah** | Legal Advocate | Country Coordinator, Bullion247 Global Limited | March 2026

54.1%GHANA INFLATION PEAK
(2022)**+8.5pp**INFLATION ADDED BY 15%
CEDI DROP**\$6,202**GOLD FORECAST JAN 2027
(ARIMA)

Every Ghanaian remembers 2022. The price of bread, transport, cooking oil, school fees, everything went up at the same time. By the end of that year, Ghana's annual inflation had reached 54.1 percent. Families that had planned carefully found their budgets shattered. The country was in genuine pain.

The instinct of many commentators was to blame global oil prices, the COVID-19 hangover, and the Russia-Ukraine war. These explanations were not entirely wrong. But a compelling new macroeconomic study by two Ghanaian researchers argues that the story of Ghana's inflation is, above all else, a story about the cedi. Not oil. Not global food prices. **The cedi.**

The study, titled **GANRAP Analysis: Gold, Oil, FX and Ghana Inflation** (GANRAP standing for Gold and Not only Oil, Rates and Prices), was authored by **Emmanuel Awuku Debrah** and **Benedict Atta Boateng**, both pursuing their MSc in Financial Engineering at WorldQuant University. Their research covers 193 monthly data points from January 2010 to January 2026, one of the most rigorous independent analyses of Ghana's macroeconomic transmission channels produced in recent years.

Finding One: The Cedi Is Ghana's Inflation Engine

PRIMARY TRANSMISSION CHANNEL

The headline finding is stark. When the cedi weakens against the US dollar, Ghana's inflation rises sharply and predictably. The statistical relationship is confirmed at the 0.1 percent significance level, meaning there is less than a one in a thousand chance this result is a coincidence.

KEY FINDING, FX TRANSMISSION**+8.5pp**

A sustained 15% cedi depreciation adds 8.5 percentage points to inflation within just 6 months. F-statistic: 20.19 | $p < 0.001$

The mechanism is straightforward to understand. Ghana imports an enormous share of what it consumes, fuel, medicines, machinery, electronics, rice, wheat, cooking oil. When the cedi weakens, every single one of those imports costs more in cedi terms. Businesses pass those higher input costs on to consumers. The result is a broad, generalised rise in prices that touches almost every household in the country.

The researchers also find that once inflation starts rising, it feeds itself. The persistence coefficient is 0.59, meaning about 60 percent of an inflation surge carries forward into the following month, without any new shock required to keep it going.

Exchange rate stability is not just a monetary policy goal. In Ghana's import-dependent economy, it is the single most powerful tool for protecting ordinary families from rising prices.

Finding Two: Gold Is Ghana's Quiet Inflation Shield

Ghana is one of Africa's largest gold producers, and the GANRAP study finds that this matters more than most people appreciate. A 10 percent rise in global gold prices is associated with appreciation of the cedi and a reduction in domestic inflation of approximately 1.5 to 1.7 percentage points over 12 months.

The logic is intuitive. When gold prices rise, Ghana's gold export revenues increase. More US dollars flow into the country. The supply of dollars in the domestic foreign exchange market rises. The cedi strengthens. And as the cedi strengthens, import costs fall, and inflation eases.

The researchers added an important qualification. When they controlled for broader US dollar strength using the Dollar Index (DXY), the gold-to-cedi relationship weakened statistically. Some of the apparent benefit of rising gold prices may reflect a weaker dollar rather than Ghana-specific export revenues. They flag this honestly, and any policy citing gold as a guaranteed cedi stabiliser must account for this nuance.

Finding Three: Oil Is Not the Villain. And That Tells a Bigger Story

Here is the result that will surprise most readers. Despite global oil prices being the most commonly cited cause of inflation worldwide, the GANRAP study finds no statistically significant relationship between international Brent crude prices and Ghana's domestic inflation.

This is not a flaw in the research. It is a policy story. Ghana's National Petroleum Authority (NPA) uses a pricing formula that regulates how much of any international oil price movement is passed through to domestic pump prices. On top of that, special foreign exchange arrangements allow oil marketing companies to access dollars at managed rates rather than pure market rates. Together, these mechanisms act as a functional buffer between global oil markets and what Ghanaians pay at the pump, even if they do not operate as direct cash subsidies in the traditional sense. Only premix fuel carries an explicit subsidy in the current framework.

The real cost of oil price volatility in Ghana therefore shows up not in the CPI but in the fiscal and foreign exchange accounts, quietly accumulating pressure. When the NPA formula or FX arrangements are adjusted to reflect market realities, as Ghana has done periodically, the resulting pump price shock hits consumers suddenly and sharply.

Finding Four: Gold Volatility Is Predictable. And That Is Useful

For investors, business owners, and treasury managers, the GANRAP volatility analysis offers a practical and reassuring insight. When gold prices become unusually turbulent, they take approximately 4.9 months to calm back down to normal levels.

GARCH(1,1) VOLATILITY FINDING

4.9 mo

Gold volatility half-life. $\alpha + \beta = 0.867$. Annualised volatility stable at 14–16% across all regimes 2010–2026, including COVID-19 and the 2022 Ghana crisis.

More remarkable is what the data shows about gold during crises. During COVID-19, gold's volatility was actually lower than during normal times. During the 2022 Ghana sovereign debt crisis, the same was true. Gold prices remained steady even as the rest of Ghana's economy was in turmoil. This is the definition of a safe haven asset.

The Gold Price Forecast

Using a mathematical trend model, the researchers project gold prices on the following trajectory:

DATE	FORECAST (USD/OZ)	LOWER 95% CI	UPPER 95% CI
Feb 2026	\$4,826	\$4,425	\$5,264
Apr 2026	\$5,057	\$4,326	\$5,912
Jun 2026	\$5,296	\$4,297	\$6,528
Sep 2026	\$5,671	\$4,290	\$7,496
Jan 2027	\$6,202	\$4,304	\$8,935

The researchers are careful to label this a trend extrapolation, not a guarantee. But the structural drivers, record central bank gold purchases, dollar uncertainty, and persistent geopolitical risk, all point in the same direction.

For Ghana, every dollar that gold rises above its current price is a dollar more in export revenue, more support for the cedi, and less inflation pressure on the families buying food at the market.

The Problems Ghana Faced. In Plain Terms

THE HUMAN COST

-54%

GHS 1,000 in savings at the start of 2022 could only buy what GHS 460 would have bought before. That is not a statistic. That is real hardship.

Ghana's government had borrowed heavily for over a decade, funding infrastructure on the assumption that growth and commodity revenues would continue to service the debt. When COVID-19 arrived in 2020, revenues collapsed and borrowing costs rose. By 2022, Ghana could no longer meet its debt obligations. The cedi crashed. Inflation followed.

The Russia-Ukraine war pushed global food and energy prices to levels not seen in decades. Ghana, already under pressure, absorbed all of these shocks at once, revealing a structurally vulnerable economy where import dependency and exchange rate sensitivity combine to make any external shock far more painful than it should be.

Why Things Are Stabilising. And How Fragile Is It?

By January 2026, Ghana's inflation had fallen to approximately 3.8 percent. That is a remarkable turnaround. But the GANRAP analysis asks an important question: is this stability built on solid foundations, or is it fragile?

The stabilisation reflects genuine policy effort. The Bank of Ghana raised interest rates aggressively. The government entered an IMF programme that restored international confidence. The cedi recovered ground. And there is a gold story behind the recovery that has not received sufficient attention, with gold prices surging to over \$4,700 per ounce, Ghana's dollar export revenues have provided quiet but meaningful cedi support throughout this period.

Ghana's disinflation from 54% to 3.8% in three years is a genuine achievement. But the structural conditions that made the crisis possible have not been removed. They have been managed. That is a meaningful difference.

The import dependency that makes Ghana's inflation so sensitive to the exchange rate has not been structurally reduced. The master switch works in both directions, and if the cedi comes under renewed pressure, inflation will respond quickly.

Gold in the Coming Years. Why the World Is Changing

Something fundamental has shifted in the global relationship with gold. In 2022 and 2023, the world's central banks bought more gold than at any point in the past five decades. China, India, Turkey, Poland, and dozens of others have been steadily moving reserves away from US dollars and into gold, reflecting concern about geopolitical risk, dollar weaponisation, and long-term US debt sustainability.

The GANRAP ARIMA model projects gold reaching \$6,202 per ounce by January 2027, a 31.5 percent increase from the January 2026 starting point. What makes gold particularly attractive is its behaviour during crises: its volatility has remained between 14 and 16 percent per year across every market regime from 2010 to 2026. Most assets become dramatically more risky during crises. Gold does not.

Gold Versus Land. An Honest Comparison

Ask any Ghanaian family where they put their savings and the answer is almost always the same: buy land. This instinct is deeply rooted and not without wisdom. But the GANRAP research invites us to examine it more carefully.

Land is priced in cedis. When the cedi crashes, the purchasing power your land represents falls with it. Gold, by contrast, is priced in US dollars globally. When the cedi falls, the cedi value of gold automatically rises.

FACTOR	LAND	GOLD
Entry Cost	High. Large upfront capital required.	Any amount. Start small and build.
Liquidity	Slow. Can take months to sell at fair price.	Fast. Sell at any dealer or GoldBOD.
Cedi Protection	Partial. Priced in cedis.	Strong. Priced in USD globally.
Inflation Hedge	Good over decades.	Excellent short to medium term.
Crisis Behaviour	Markets freeze. Hard to sell fairly.	Rises or holds steady. Safe haven.
Fraud Risk	High in Ghana. Title disputes common.	Low with reputable dealers.
Global Value	Local only. Cannot move.	Same value in Accra, London, or Dubai.
16-Year Return	Varies widely by location.	From \$1,060 to \$4,700+. Over 343% in USD.

Gold does not replace land. It complements it. The wisest Ghanaian family holds both: land for the long-term local foundation, and gold for protection against the cedi risk the GANRAP data confirms is Ghana's defining economic vulnerability.

GoldBOD, the Ghana Gold Board, has created formal frameworks for ordinary citizens to buy and hold gold legally and safely. A teacher, a market trader, a nurse, a young graduate, all can begin

building a dollar-denominated store of value in small increments, protecting themselves against exactly the inflation and depreciation risks this research has now quantified with precision.

What Government Must Do. Six Policy Priorities

The GANRAP findings are not academic curiosities. Each result points directly at a concrete policy decision.

01 **Make Exchange Rate Stability a National Obsession**

A 15% cedi depreciation adds 8.5pp to inflation within six months. Every cedi spent defending the exchange rate in advance is worth far more than every cedi spent fighting inflation after it has already taken hold.

02 **Capture Ghana's Gold Windfall Domestically**

With gold near all-time highs, Ghana must ensure export revenues are captured in the domestic financial system, through local refining, stronger GoldBOD frameworks, and gold-backed domestic instruments.

03 **Reform Fuel Subsidies Carefully. Not Abruptly**

Subsidy removal without a parallel FX stabilisation strategy creates a double shock: higher fuel prices and a weaker cedi arriving simultaneously, precisely the kind of Perfect Storm that drove the 2022 crisis.

04 **Build a Perfect Storm Playbook**

Government needs a pre-built policy response for simultaneous commodity, oil, and FX shocks, ready to activate, not improvised in the middle of a crisis.

05 **Act Early on Monetary Policy. Every Time**

Inflation persistence of 0.59 means once it starts, it carries its own momentum for months. Early, decisive rate action and credible forward guidance are far more effective than delayed reaction.

06 **Rebuild the Long-Run Equilibrium. Over Years, Not Months**

Before 2022, Ghana's macroeconomic variables moved in a stable, predictable long-run relationship. Restoring it requires sustained fiscal discipline, reserve accumulation, and monetary credibility maintained consistently through both calm and turbulent periods.

Technical Terms. A Quick Reference

The following terms are used in this article in their precise econometric sense. All other terms are explained within the text as they appear.

VECTOR AUTOREGRESSION (VAR)

A statistical model that tracks how multiple economic variables, gold prices, oil prices, the exchange rate, and inflation, influence each other simultaneously over time. The GANRAP VAR(3) model looks back three months at each variable to understand how today's conditions developed from yesterday's.

GRANGER CAUSALITY

A statistical test that asks: does knowing the past behaviour of one variable help predict another? GANRAP confirms that FX movements Granger-cause inflation at the 0.1% significance level, meaning there is less than a one in a thousand chance this relationship is coincidental.

JOHANSEN COINTEGRATION TEST

A test for whether economic variables share a stable long-run relationship. Think of two boats tied with a rope, they drift apart in the short run but the rope always pulls them back together. GANRAP finds cointegration before the 2022 crisis, confirming the system was predictable and stable in normal times.

IMPULSE RESPONSE FUNCTION (IRF)

A tool that shows how one variable responds over time after a sudden shock to another. The GANRAP IRFs show that a cedi depreciation shock peaks in its impact on inflation within 3 to 5 months and fades after approximately 8 months.

FORECAST ERROR VARIANCE DECOMPOSITION (FEVD)

A method that breaks down how much of the uncertainty in predicting one variable, such as inflation, is explained by shocks to each of the others. The GANRAP FEVD shows that 16 to 27 percent of all uncertainty about Ghana's future inflation traces back to unexpected movements in the exchange rate.

ARIMA MODEL (AUTOREGRESSIVE INTEGRATED MOVING AVERAGE)

A mathematical trend-following model that forecasts future values of a variable based purely on its own historical pattern. The GANRAP ARIMA(1,1,1) model projects gold reaching \$6,202 per ounce by January 2027 by extrapolating the current bull market trend.

GARCH MODEL (GENERALISED AUTOREGRESSIVE CONDITIONAL HETEROSCEDASTICITY)

A model that measures and forecasts how volatile an asset's price is over time. The GANRAP GARCH(1,1) analysis finds that gold volatility has a shock half-life of approximately 4.9 months, meaning that a period of unusual price turbulence calms back to normal in about five months.

DXY (US DOLLAR INDEX)

A measure of the strength of the US dollar against a basket of six major world currencies. GANRAP uses the DXY as a robustness check to test whether the relationship between gold prices and the cedi is genuinely Ghana-specific, or whether both are simply responding to broader US dollar movements.

ADMINISTERED FUEL PRICING

Ghana's National Petroleum Authority (NPA) uses a pricing formula that regulates how much of an international oil price movement passes through to domestic pump prices. Special FX arrangements also allow oil importers to access dollars at managed rates. Together these act as a functional buffer between global oil markets and domestic pump prices, which is why GANRAP finds no direct statistical link between Brent crude prices and Ghana's inflation. Only premix fuel carries an explicit government subsidy in the current framework.

TRANSMISSION CHANNEL

The pathway through which a shock in one part of the economy reaches another. The exchange rate is Ghana's dominant inflation transmission channel, the pipe through which global commodity shocks, capital flows, and external pressures flow directly into the price of goods on Ghanaian market shelves.

SOVEREIGN DEBT CRISIS

When a national government is unable to repay or service its outstanding debts. Ghana's 2022 to 2023 sovereign debt crisis forced the country into an emergency IMF programme. The loss of international investor confidence reduced the supply of US dollars in Ghana, weakened the cedi sharply, and amplified the inflation crisis.

SCENARIO ANALYSIS

A stress-testing method that asks: what would happen if a specific event occurred? The GANRAP study models five scenarios, Baseline, Gold Surge, FX Crisis, Oil Spike, and Perfect Storm, allowing policymakers and investors to prepare for different possible futures rather than relying on a single forecast.

About the Authors

Charis Joshua Debrah

ARTICLE AUTHOR

Legal Advocate and Country Coordinator at Bullion247 Global Limited, Ghana. Specialises in Gold and Commodities offtake, overseeing mining equipment sales, leasing operations, and gold offtake facilitation in collaboration with GoldBOD (Ghana Gold Board). Currently pursuing a degree in Law at Wisconsin University. Professional interests sit at the intersection of law, commodities, and macroeconomic policy.

Email: Jochabra@yahoo.com

Phone: +233 268 376 343

Emmanuel Awuku Debrah

LEAD RESEARCH AUTHOR

Lead author of the GANRAP Analysis. Background in agricultural engineering, production management, and DevOps engineering. Currently pursuing an MSc in Financial Engineering at WorldQuant University. Research interests span macroeconomic modelling, commodity markets, and quantitative risk analysis. Co-Founder of Adepashoes Ghana Limited, Ghana's premium bespoke shoe manufacturer.

Email: emmadeb1@gmail.com

Phone: +233 054 121 5818

Benedict Atta Boateng

CO-RESEARCH AUTHOR

Co-author of the GANRAP Analysis. Unit Head, I.T Control at GTBank with an MBA in Accounting and Finance. Currently pursuing an MSc in Financial Engineering at WorldQuant University. Work focuses on applied econometrics and financial risk modelling.

Email: baboateng@rocketmail.com

Phone: +233 050 144 9483

The full GANRAP Analysis report, including all econometric outputs, IRF charts, scenario simulations, and the complete technical methodology log, is available upon request directly from the research authors.

© Charis Joshua Debrah, March 2026. Based on GANRAP Analysis by Emmanuel Awuku Debrah and Benedict Atta Boateng, WorldQuant University MSc Financial Engineering candidates.