

CAPSTONE PROJECT

Gold and Bitcoin as Inflation Hedges



A Regime-Dependent, Data-Driven Analysis for Singaporean Retail Investors

Jojo Wibowo | February 2, 2026

Executive Summary

Project Overview & Key Deliverables

Slide 02

The Challenge

Singaporean retail investors face conflicting narratives about inflation hedges. Traditional advice fails to account for **regime-dependent behavior** of assets like Gold and Bitcoin.

The Solution

An **AI-assisted, regime-based dashboard framework** that translates complex macro signals into interpretable "Traffic Light" indicators for decision support.

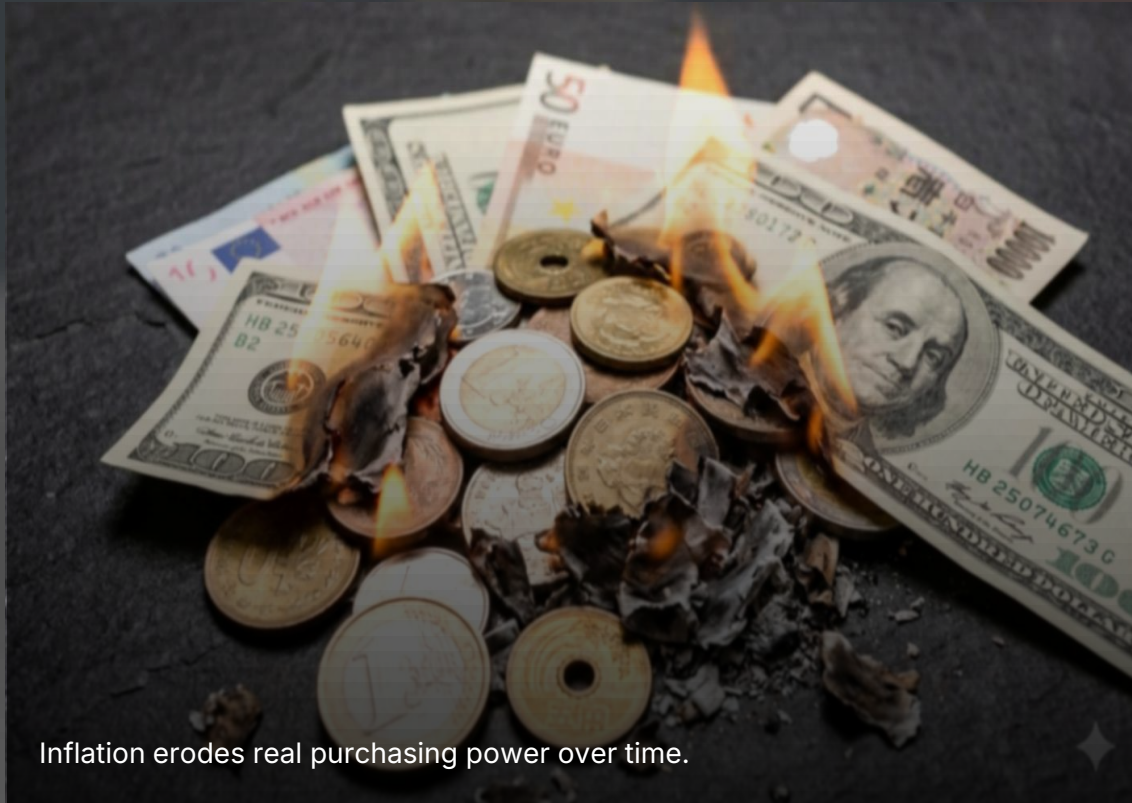
Key Insights

- **Gold is Defensive**
Hedge against currency stress & macro uncertainty, not just CPI.
- **Bitcoin is Cyclical**
Driven by sentiment & liquidity. A risk asset, not a safe haven.
- **Context Matters**
Hedge effectiveness depends entirely on the current market regime.

The Problem & Opportunity

Why Traditional Narratives Fail

Slide 03



Inflation erodes real purchasing power over time.

The Retail Dilemma

Investors are told "Buy Gold" or "Buy Bitcoin" to beat inflation. But these assets often fail to perform when needed most (e.g., 2022).

The Missing Link

Static analysis ignores **Regimes** .

We need to know *WHEN* to hold these assets, based on:

- Macro Stress
- Market Sentiment
- Currency Volatility

Methodology

Rigorous Data Science Pipeline

Slide 04



1

Data Ingestion

Weekly data (2017-2025) for Gold, Bitcoin, CPI, Rates, and Sentiment.

2

Feature Engineering

Created lag features, rolling volatility, and regime indicators.

3

Machine Learning

Random Forest & Logistic Regression to identify non-linear drivers.

4

Validation

Time-series cross-validation and stress testing.

Key Findings: Gold

Currency-Mediated Defensive Asset

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Not a Direct CPI Hedge

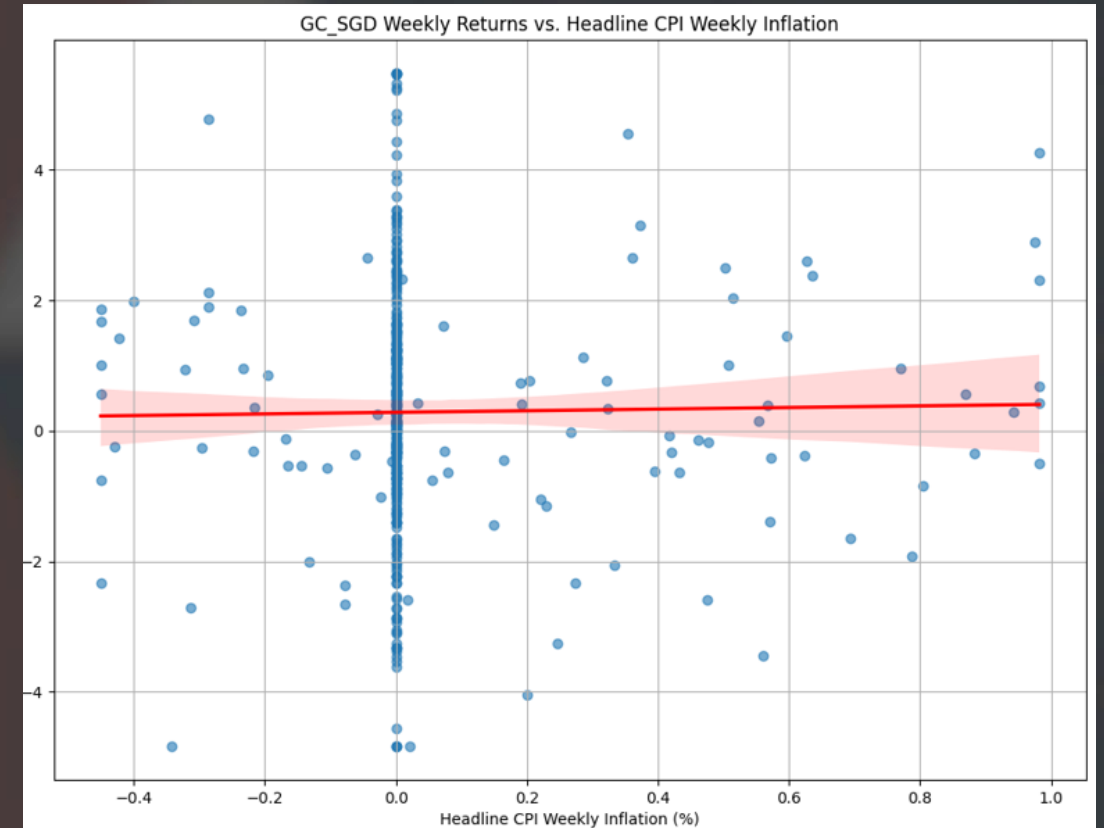
Correlation with Singapore CPI is near zero ($r \approx 0.02$). Gold does not mechanically track inflation prints.

Currency Dynamics Dominate

Feature importance shows 54% driven by USD/SGD and DXY. Gold protects against currency devaluation.

Macro-Stress Stabilizer

Performs best during high macro-financial stress, acting as a portfolio diversifier.



Key Findings: Bitcoin

Sentiment-Driven Risk Asset

Slide 06

Sentiment Dominates

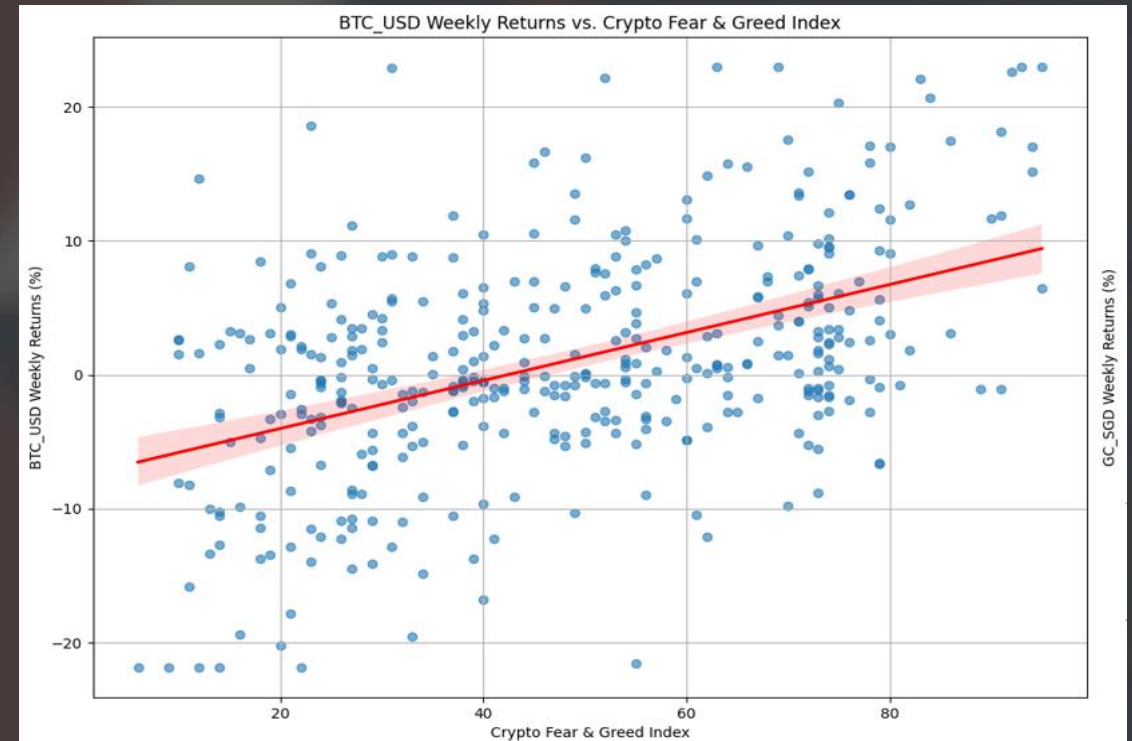
Feature importance is 47% sentiment-driven. Correlation with Fear & Greed Index is strong ($r = 0.47$).

Liquidity Sensitive

Inverse relationship with Fed Funds Rate. Performs poorly during monetary tightening.

Not an Inflation Hedge

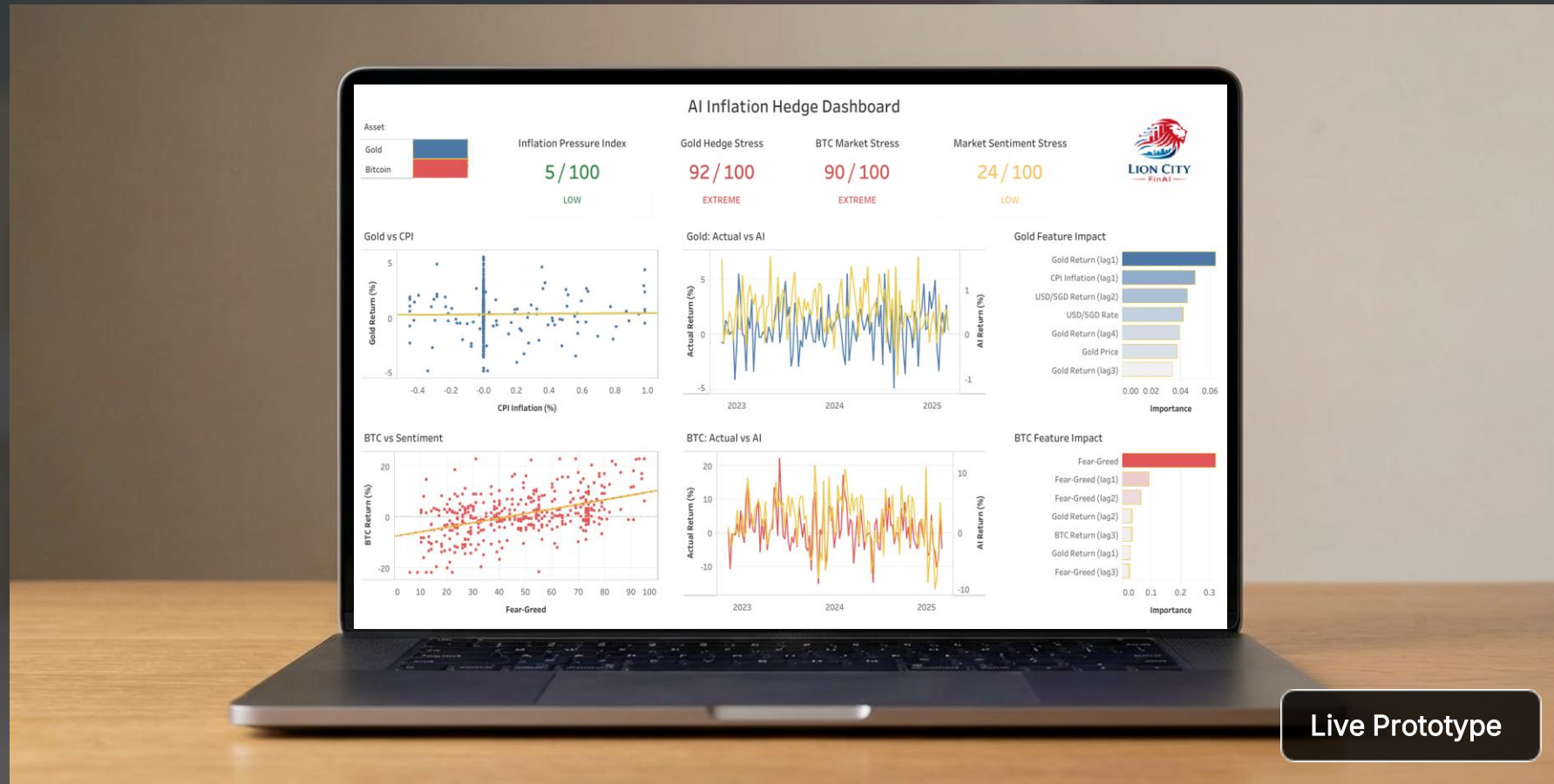
Weak/unstable correlation with CPI. Functions as a tactical risk asset, not a safe haven.



The Solution: Regime Dashboard

AI-Assisted Decision Support System

Slide 07



Macro Stress

Quantifies economic pressure

Sentiment Regime

Tracks fear & greed cycles

Hedge Relevance

Dynamic asset scoring

Strategic Recommendations

Actionable Guidance for 2026

Slide 08

1 Gold Strategy

- ▶ **Role:** Macro-Stress Stabilizer
- ▶ **When to Buy:** High Macro Stress (>60) + Currency Volatility
- ▶ **Action:** Use as defensive hedge against USD/SGD shocks.

2 Bitcoin Strategy

- ▶ **Role:** Sentiment-Driven Risk Asset
- ▶ **When to Buy:** Positive Sentiment (>50) + High Liquidity
- ▶ **Action:** Tactical exposure only; avoid during "Extreme Fear".

3 Risk Control

- ▶ **Regime Awareness:** Monitor dashboard signals weekly.
- ▶ **Diversification:** Neither asset is a "perfect" hedge.
- ▶ **Warning:** If Confidence Score < 50, pause all major changes.

Limitations & Future Work

Constraints and Next Steps

Slide 09

Key Limitations

- ⚠ **Sample Period:** Analysis limited to 2017-2025; historical patterns may not persist.
- ⚠ **Non-Causal:** Findings reflect associations, not guaranteed causal mechanisms.
- ⚠ **Data Lag:** Macro indicators (CPI) have publication delays vs. real-time markets.

Future Roadmap

- **NLP Sentiment:** Integrate Twitter/News sentiment for granular signals.
- **On-Chain Metrics:** Add blockchain data (active addresses) to Bitcoin model.
- **Portfolio Optimization:** Develop regime-conditional weight recommendations.

Thank You

"Inflation hedging is not a static property—it is a conditional, regime-dependent strategy."

Q&A Session

Open for Discussion

Analyst: Jojo Wibowo | RevoU FSDA Batch October 2025