

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.

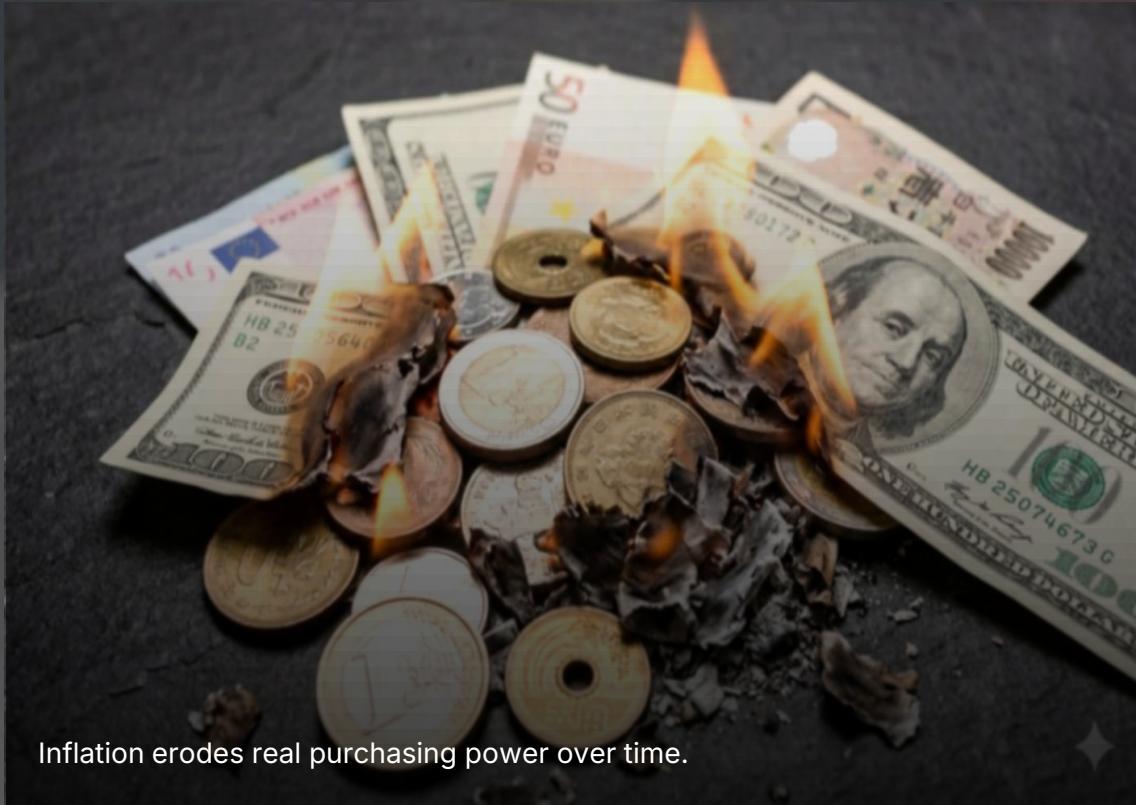
- **Context Matters**

Hedge effectiveness depends entirely on the current market regime.

The Problem & Opportunity

Why Traditional Narratives Fail

Slide 03



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

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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

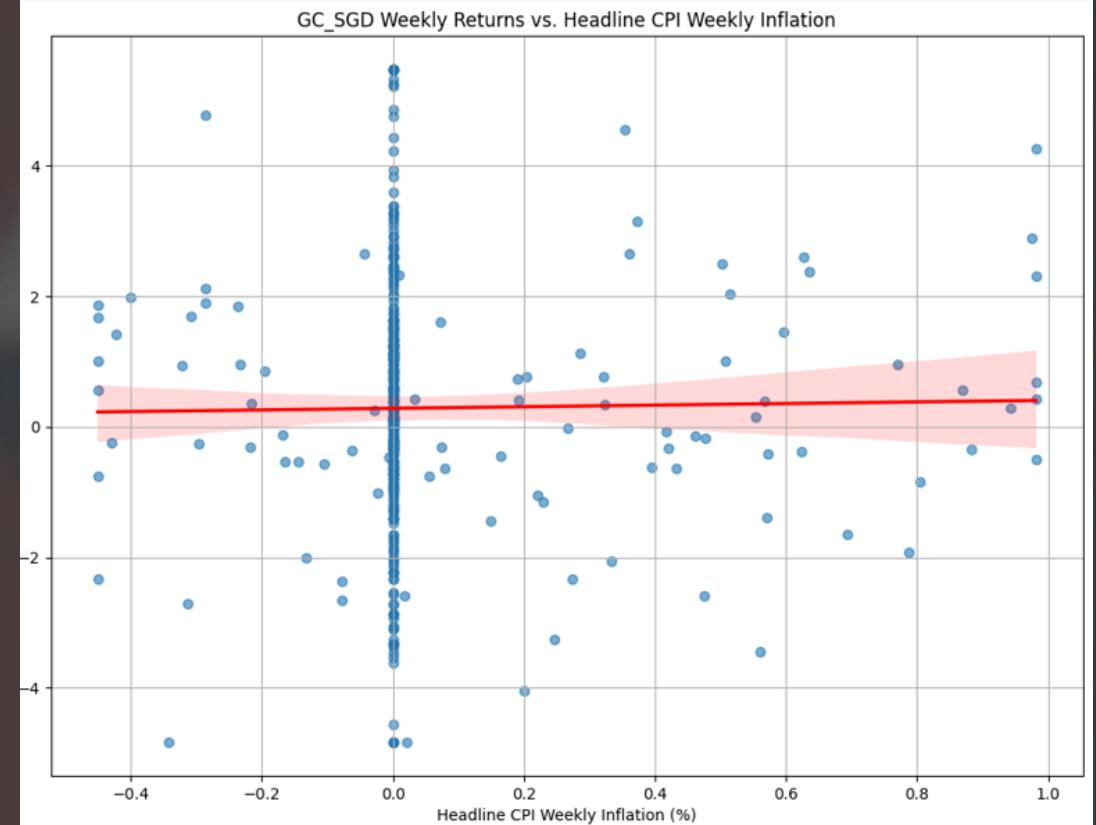
Correlation with Singapore CPI is near zero ($r \approx 0.02$). Gold does not mechanically track inflation prints.

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

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Sentiment Dominates

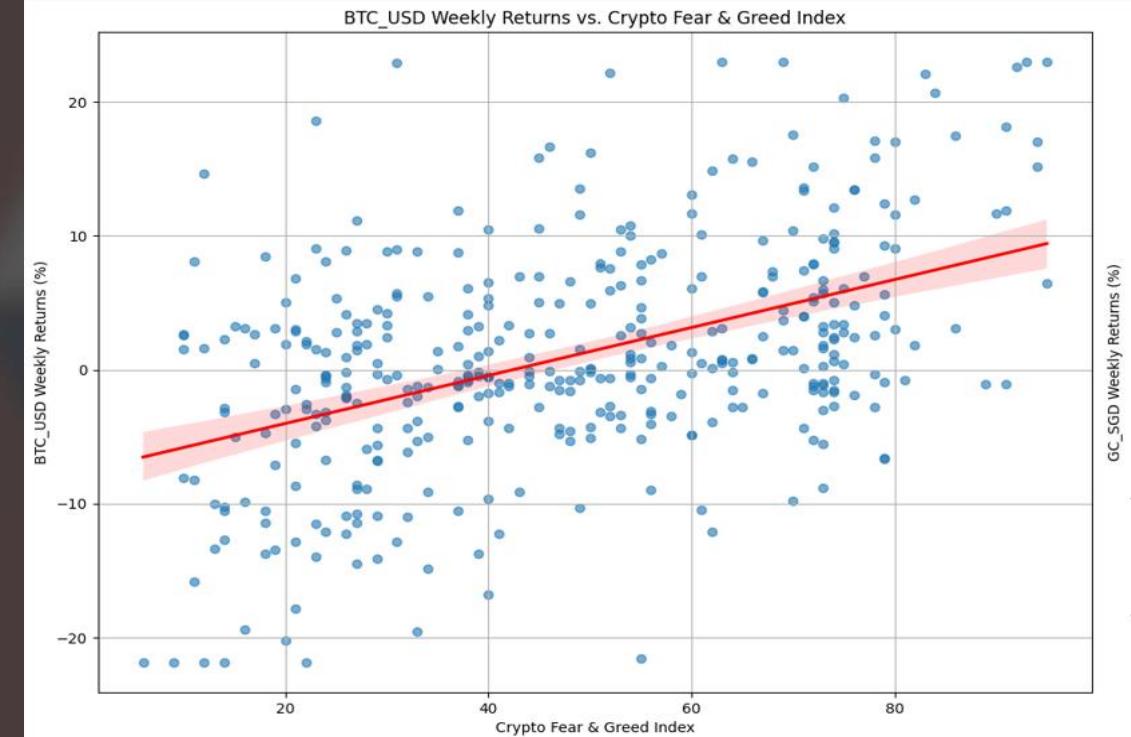
Feature importance is 47% sentiment-driven. Correlation with Fear & Greed Index is strong ($r = 0.47$).

Liquidity Sensitive

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

Not an Inflation Hedge

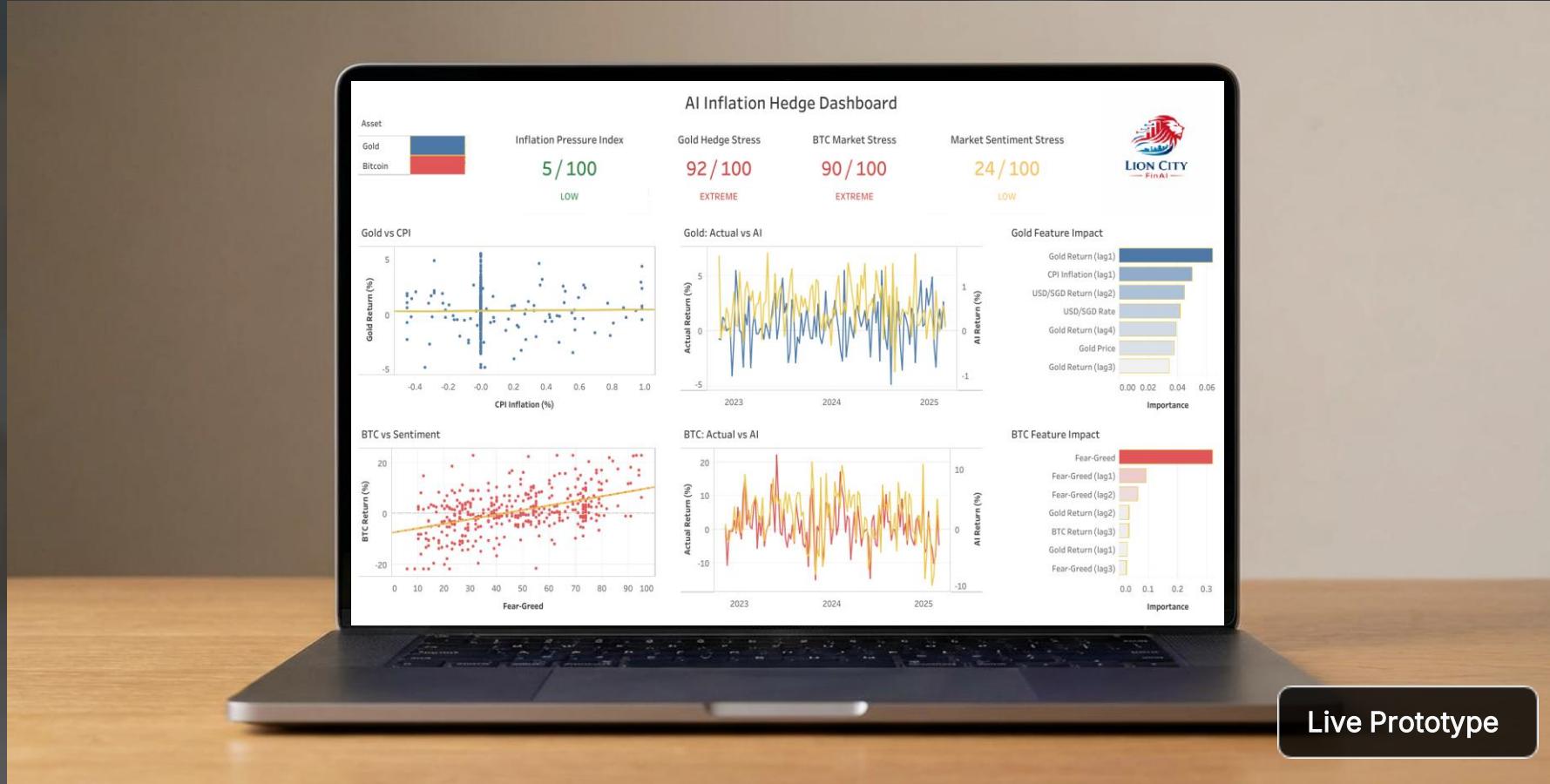
Weak/unstable correlation with CPI. Functions as a tactical risk asset, not a safe haven.



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