

# Cross-Asset Market Regime Monitor

MSc in Financial Markets and Investments - Skema Business School

Python Programming for Finance

Academic Year 2024/25

## 1 Purpose

The dashboard visualizes the market performance of each asset class across different market regimes. It includes indicators of the current market regime, term structures of equity, gold, crude oil, wheat, and dollar futures, as well as the yield curves of US and German bonds.

## 2 Target Audience

The dashboard is designed for traders and portfolio managers.

## 3 Data Sources

The dashboard will utilize open-source datasets for market data, including indicators for asset performance, futures term structures, and bond yield curves.

## 4 Key Metrics / Indicators

- **Growth:** Indicators related to economic growth trends.
- **Inflation:** Measures of inflation across market regimes.
- **Volatility:** Market volatility metrics for different asset classes.
- **Yields:** Yield curves for US and German bonds.
- **Performance Metrics:**
  - Equities
  - Nominal bonds
  - Gold
  - Crude oil
  - Wheat
  - Dollar
  - Inflation-linked bonds

## 5 Data Visualization

- **Line Charts:** For tracking time series performance of key metrics and asset classes.
- **Term Structure Graphs:** To visualize the term structures of equity, gold, crude oil, wheat, and dollar futures.
- **Heatmaps:** For comparing performance metrics across asset classes and market regimes.

## 6 Filters

- **Time Periods:** Options to filter data by specific date ranges.
- **Asset Classes:** Ability to select and analyze specific asset classes (e.g., equities, bonds, gold, etc.).
- **Market Regimes:** Filters to view data based on specific market regimes.

## 7 Layout & Design

- The dashboard will be implemented using **Streamlit**.
- **Structure:**
  - Sidebar for filters (time periods, asset classes, market regimes).
  - Main panels for visualizations:
    - \* Line charts section for performance metrics.
    - \* Term structure graphs section.
    - \* Heatmaps section for asset comparison.
- **Responsive Design:** Optimized for desktop viewing.

## 8 Technical Requirements

- **Platform:** The dashboard will be embedded on the homepage of your personal website.
- **Deployment:** Hosted on a web server capable of supporting Streamlit applications.
- **Update Frequency:** The dashboard will update automatically with fresh data every 24 hours.

## 9 User Roles

- **Access Level:** The dashboard will be publicly accessible without login or user authentication.

## 10 Data Handling

- **Update Frequency:** Data will update daily to reflect the latest market performance and indicators.

## 11 Testing & Deployment

### 11.1 Testing

- **Functionality Testing:** Verify that all visualizations (line charts, term structure graphs, heatmaps) work as expected.
- **Filter Testing:** Ensure filters for time periods, asset classes, and market regimes function correctly.
- **Responsiveness:** Confirm the dashboard integrates seamlessly on the homepage of your personal website and displays correctly across devices.

- **Data Accuracy:** Cross-check data displayed against the source datasets for correctness.

## 11.2 Deployment

- Host the Streamlit app on a web server compatible with daily updates.
- Embed the dashboard into the homepage via iframe or direct integration.
- Set up automatic data refresh scripts to update the dashboard daily.