Gold-Equity Dynamic Ratio Strategy

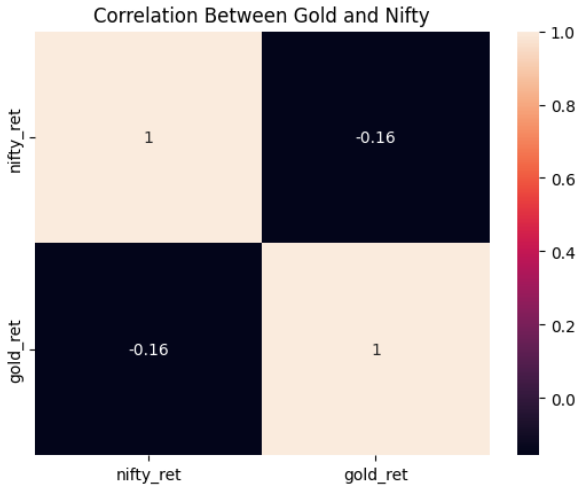
Colab Notebook link -
https://colab.research.google.com/drive/1kRM5x_4KRsy3DppzQYEepXDscrITcfxz?usp=sharing

The trading strategy is a simple portfolio allocation strategy based on the relative performance of two ETFs: Gold and Equity. Here's an explanation of the strategy:

In this strategy, two complementary approaches have been employed: mean reversion and momentum.
The **mean reversion** approach involves adjusting the allocation by increasing it in the asset that is relatively weaker. This adjustment aims to capitalize on the expectation that the weaker asset will experience a rebound or return to its historical average performance.

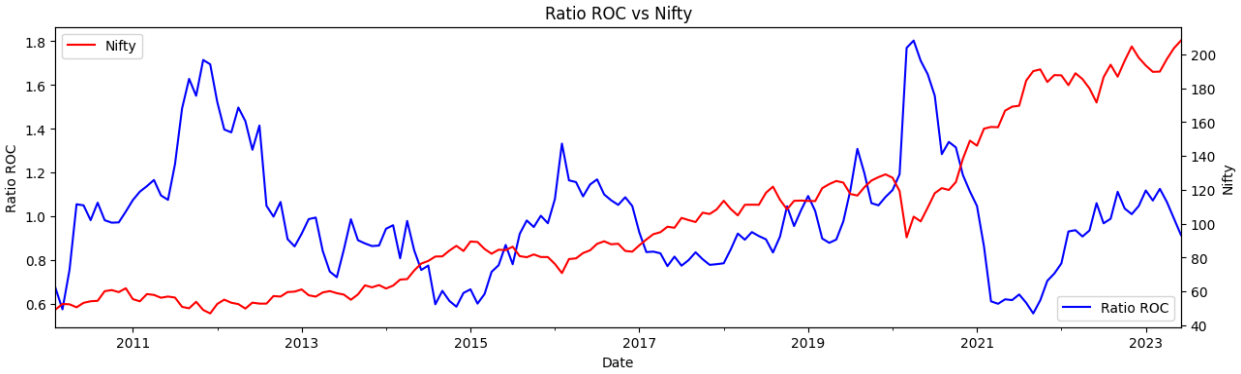
On the other hand, the **momentum** approach entails increasing the allocation in the asset that is relatively stronger. By doing so, the strategy seeks to take advantage of the upward trend and momentum exhibited by the stronger asset.

1. ## ETF Selection:
    - The strategy focuses on two ETFs, Gold and Equity. Gold represents the performance of gold, while Equity represents the performance of the NIFTY 50 index.
2. ## Ratio Calculation:
    - The strategy calculates the ratio between the adjusted close prices of Gold and Equity. This ratio indicates how the performance of gold compares to the performance of the NIFTY 50 index.

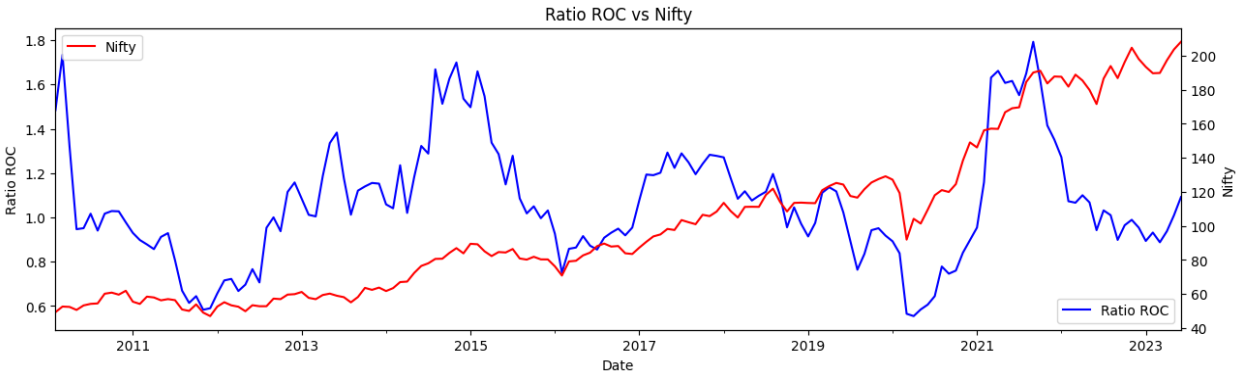


3. ## Yearly Return Comparison:
    - The strategy calculates the yearly return of the ratio by comparing its current value to its value 252 trading days ago. This helps identify the long-term performance trend of gold relative to the NIFTY 50 index.

<u>Mean Reversion</u>



<u>Momentum</u>

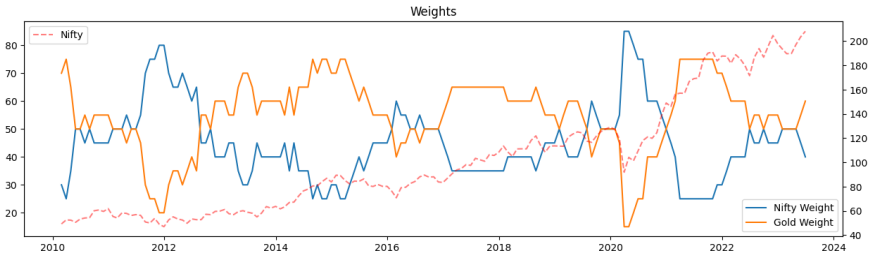


4. ## NIFTY Weight Adjustment:
    - The strategy starts by assigning an initial weight of 50% to the Equity ETF. This means that initially, half of the portfolio value is allocated to the NIFTY 50 index.

5. ## Ratio-Weight Mapping:
    - The strategy defines a mapping between specific ranges of yearly returns of the ratio and corresponding weights for Equity. These weights determine the allocation of the portfolio between Equity and Gold.
    - For example, if the yearly return of the ratio falls within a certain range (e.g., 0.1 to 0.2), a predetermined weight is assigned to Equity based on the mapping.

6. ## Dynamic Weight Adjustments:
    - The strategy dynamically adjusts the weight allocated to Equity based on the observed yearly returns of the ratio. If the ratio's yearly return falls within a specific range, the weight assigned to Equity is updated according to the predefined mapping.

Mean Reversion



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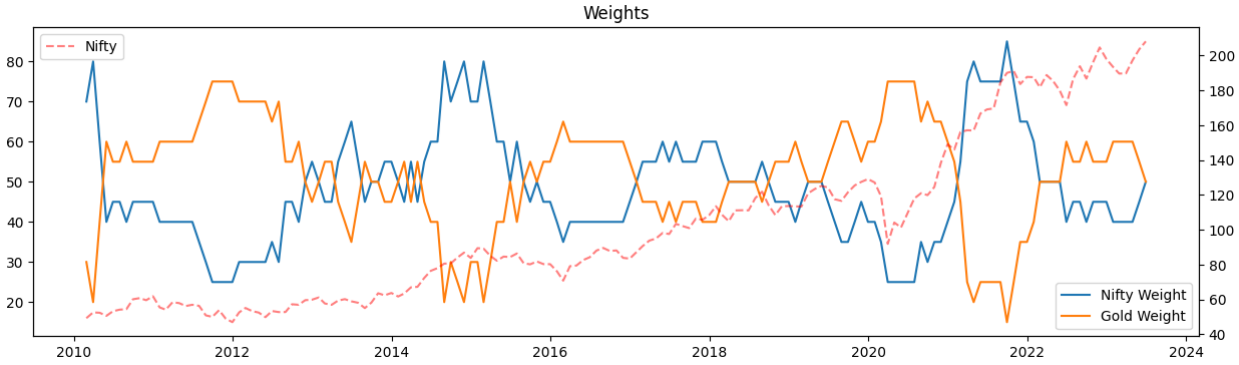
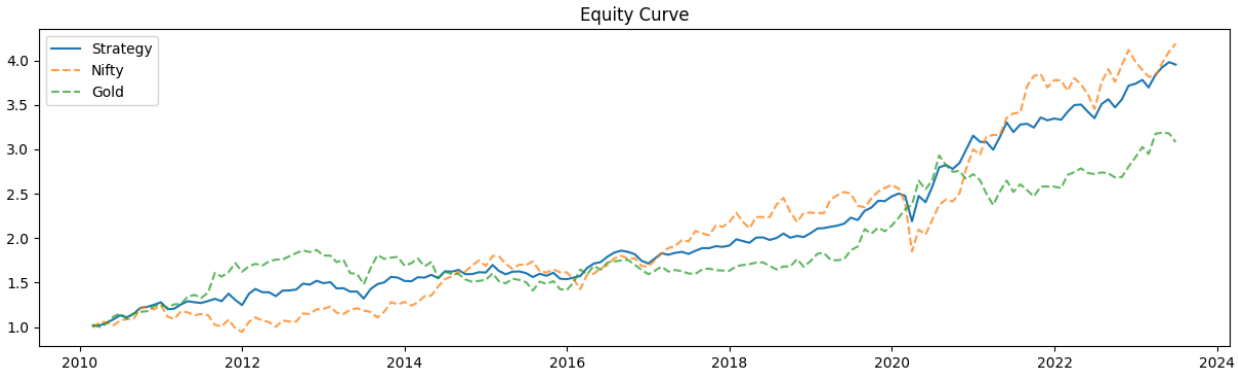


7. ## Gold Weight Calculation:
    - The strategy calculates the weight allocated to Gold as the complement of the Equity weight. This ensures that the total portfolio weight remains 100%.
8. ## Portfolio Return Calculation:
    - The strategy calculates the portfolio return by combining the weighted returns of Equity and Gold. The weights assigned to each ETF are used to determine their respective contributions to the overall portfolio return.
9. ## Performance Evaluation:
    - The strategy evaluates the performance of the portfolio by calculating various metrics such as cumulative maximum values and drawdowns. These metrics provide insights into the potential upside and downside risks associated with the strategy.

Equity Curves:

Mean Reversion



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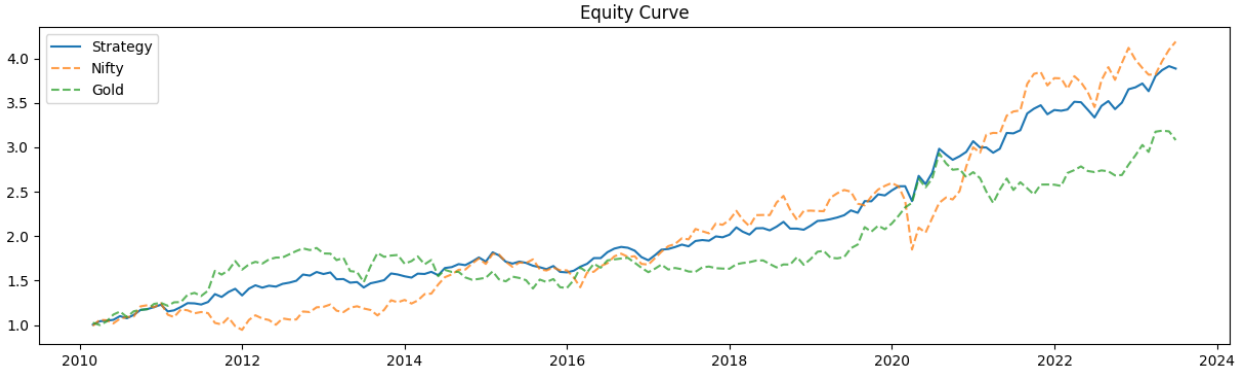

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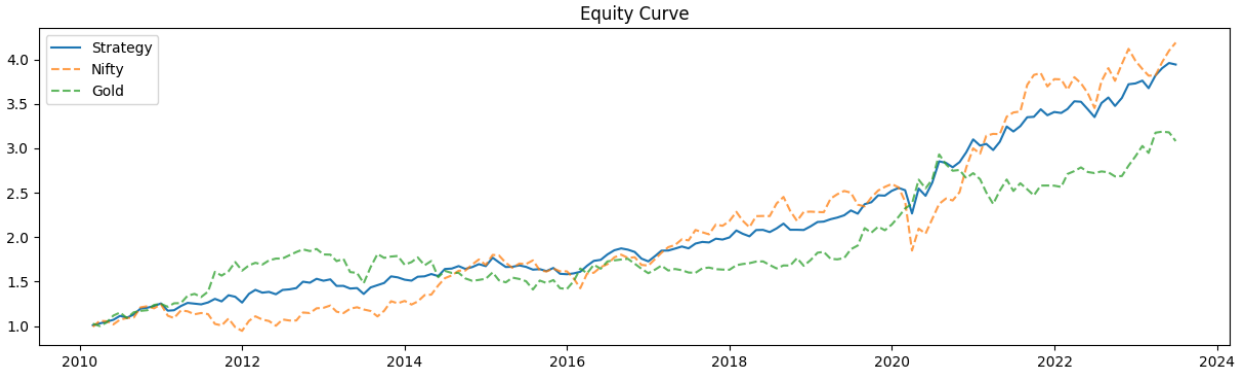
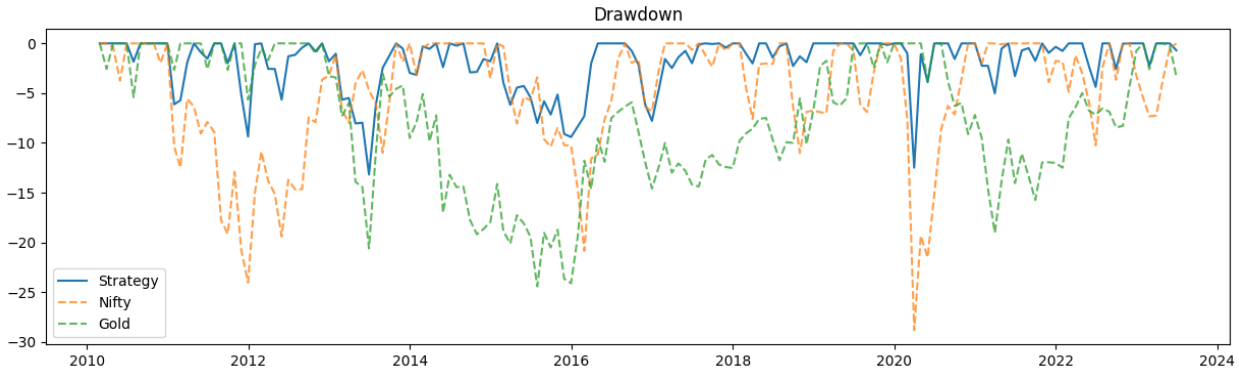


Drawdowns:

Mean Reversion



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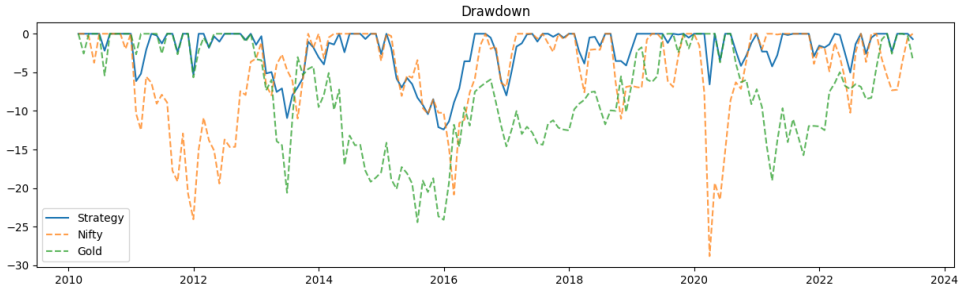
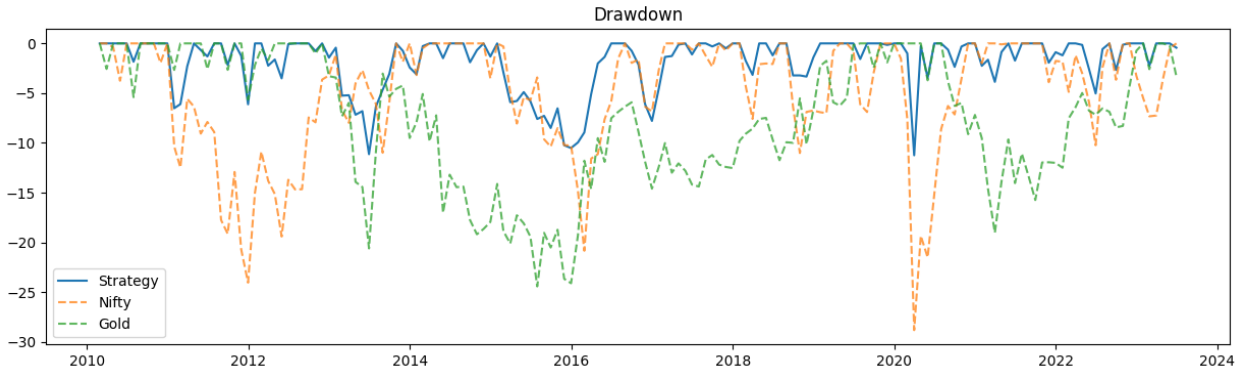


Fixed 50-50 Allocation



Overall, the trading strategy dynamically adjusts the allocation of a portfolio between Equity (representing the NIFTY 50 index) and Gold (representing gold) based on the observed yearly performance of the ratio between the two ETFs. By adjusting the allocation according to the predefined mapping, the strategy aims to capture potential trends and optimize the portfolio's risk-return profile.