Mathematical Trading Strategies

Assignment 2

Description:

Based on the optimized indicators, we first generated buy and sell signals based on specific conditions. These signals are represented by 1 for a buy signal and 0 for a sell signal. Using these buy and sell signals, we calculated the daily returns.

The daily returns represent the percentage change in price from the previous day's closing price to the current day's closing price. By using these daily returns, we calculated the following performance metrics for each of the three indicators:

1. Cumulative Returns: This metric measures the overall return of the trading strategy over the given period. It is calculated by multiplying all the daily returns together and subtracting 1.
2. Max Drawdown: Max drawdown represents the largest percentage drop from a peak in the cumulative returns to a subsequent low. It is calculated by finding the minimum difference between the cumulative returns and its previous peak.
3. Sharpe Ratio: The Sharpe ratio measures the risk-adjusted return of an investment strategy. It is calculated by subtracting the risk-free rate of return from the annualized average returns and dividing it by the annualized standard deviation of the returns.

By evaluating these performance metrics, we can assess the effectiveness and profitability of the trading strategy based on the selected indicators.

	MACD	Bollinger Bands	Keltner Channels
Cumulative returns	0.21	-0.76	21.13
Sharpe Ratio	-0.06	-0.92	1.47
Max Drawdown	-0.09	-0.84	-0.55