

## Abstract

This independent study aims to analyze and compare investment returns on SET50 Index Futures with three technical indicators, namely Slow Stochastic Oscillator, Moving Average Convergence Divergence (MACD) and Bollinger Bands. A backtesting approach was carried out for three years (2022–2024) based on trading strategies formulated from each indicator's signals with four entry points per day. The results indicate that MACD posted the maximum average return with minimal risk. Whereas Slow Stochastic Oscillator performed well during highly volatile markets, Bollinger Bands performed optimally during range-bound markets. The results depict the strong and weak aspects of each strategy and present a standard for the best investment selection based on market conditions.

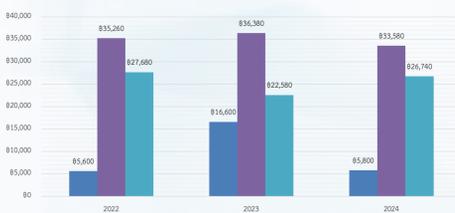
## Introduction

This study, inspired by coursework and an internship at the Office of the Board of Investment (BOI), applies technical analysis to forecast SET50 Index Futures [1] price movements. Using the Slow Stochastic Oscillator, MACD, and Bollinger Bands—each triggered by a four-point [2] price shift—it measures average returns, win rates and Value at Risk.

## Results

■ Stochastic ■ MACD ■ Bollinger Bands

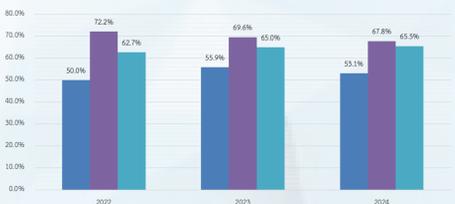
Graph 1 Net Return



Graph 2 Average Return



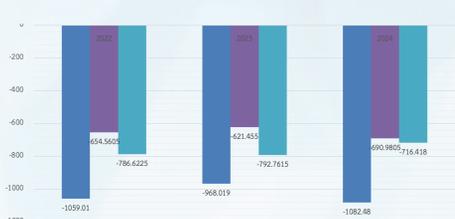
Graph 3 Win Rate



Graph 4 Standard Deviation



Graph 5 Value at Risk  $VaR = \mu - (Z \times SD)$



## Methodology

### Stochastic Oscillator

$$\%K = \frac{C - L}{H - L} \times 100 \quad \%D = 3\text{Day SMA of } \%K$$

### Moving Average Convergence Divergence

$$MACD = EMA(P, N_1) - EMA(P, N_2) \quad \text{Signal Line} = EMA_{N_3} \text{ of } MACD$$

$$EMA_t = (P_t \times \alpha) + [EMA_{t-1} \times (1 - \alpha)] \quad \alpha = \frac{2}{N + 1}$$

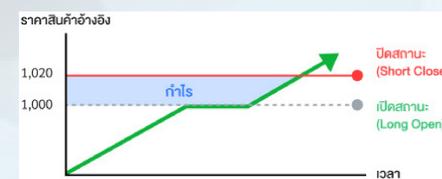
### Bollinger Bands

$$\text{Middle Band} = SMA(n) \quad \text{Upper Band} = \text{Middle Band} + (2 \times SD)$$

$$\text{Lower Band} = \text{Middle Band} - (2 \times SD)$$

### Trading Strategy

#### Long Futures



#### Short Futures



### Slow Stochastic



### MACD



### Bollinger Bands



## Conclusion

According to the backtesting results, MACD provided the highest returns with high accuracy. Meanwhile, the Slow Stochastic Oscillator appears to be better suited to short-term speculation but is riskier than Bollinger Bands, which provide a good trade-off between profit potential and risk.

## References

[1] "SET50 Index Futures คืออะไร." Thailand Futures Exchange, Thailand Futures Exchange, <https://www.tfex.co.th/th/education/knowledge/article/6-set50-index-futures>.  
 [2] ชนบท ทองสุข. (2024). รายงานการฝึกงาน. Google Drive. [https://drive.google.com/file/d/1xTK4uAn\\_lVMxcln6dJHVEksIPsM8wQA/view?usp=sharing](https://drive.google.com/file/d/1xTK4uAn_lVMxcln6dJHVEksIPsM8wQA/view?usp=sharing)