

# **GRAB Research Project**

## **A trend following strategy replication analysis**

**Yunfeng Liu    Nov 25, 2022**

# What is GRAB: A Trend Following Strategy

**Chapter 25: “How to GRAB a Bargain Trading Futures . . . Maybe” by Mark Sleeman**



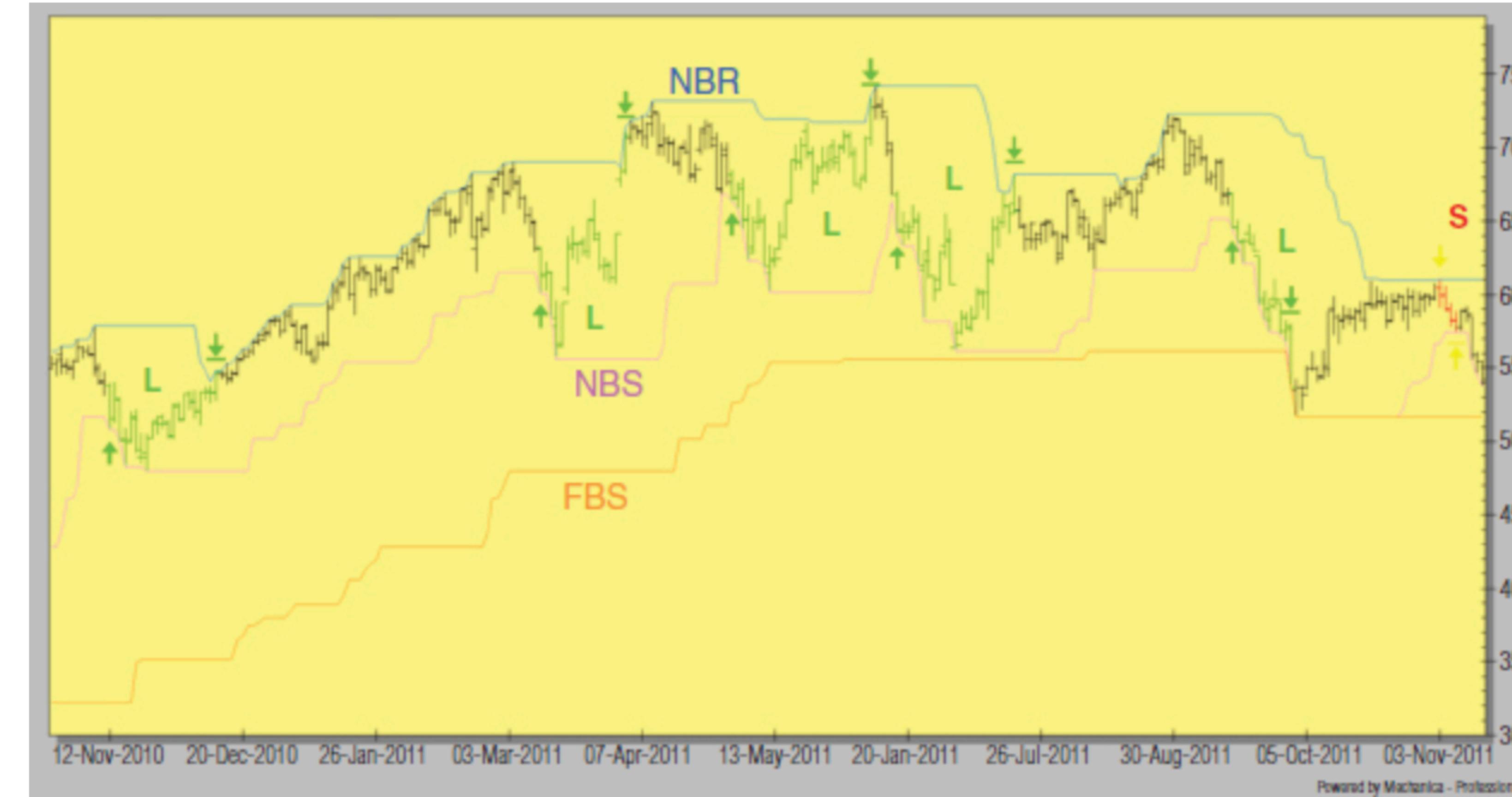
# Trend detection + Swing trading

$$K_s^f(t) = \min(L_{t-N_f}, \dots, L_{t-1})$$

$$K_r^f(t) = \max(H_{t-N_f}, \dots, H_{t-1})$$

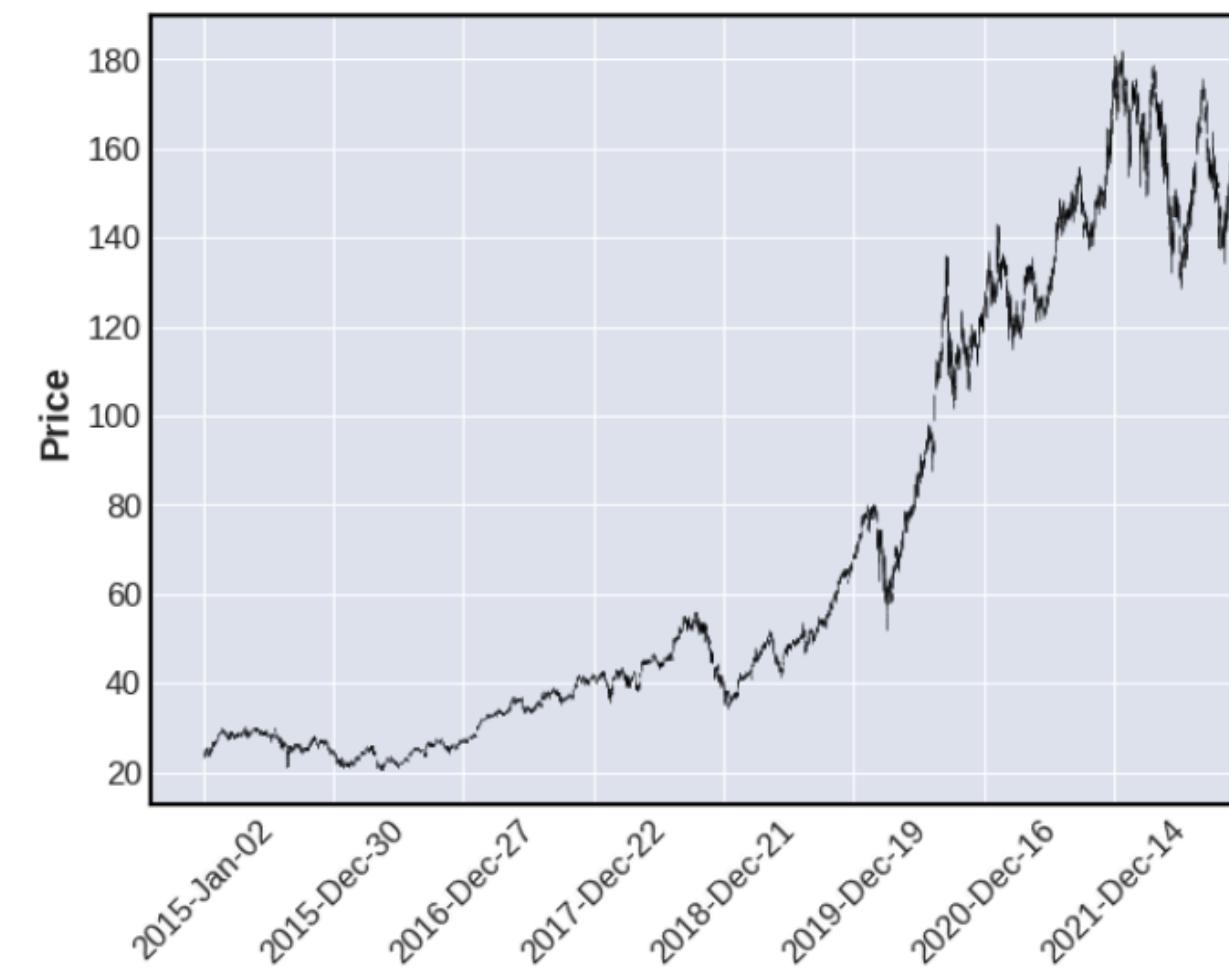
$$K_s^n(t) = \min(L_{t-N_n}, \dots, L_{t-1})$$

$$K_r^n(t) = \max(H_{t-N_n}, \dots, H_{t-1})$$

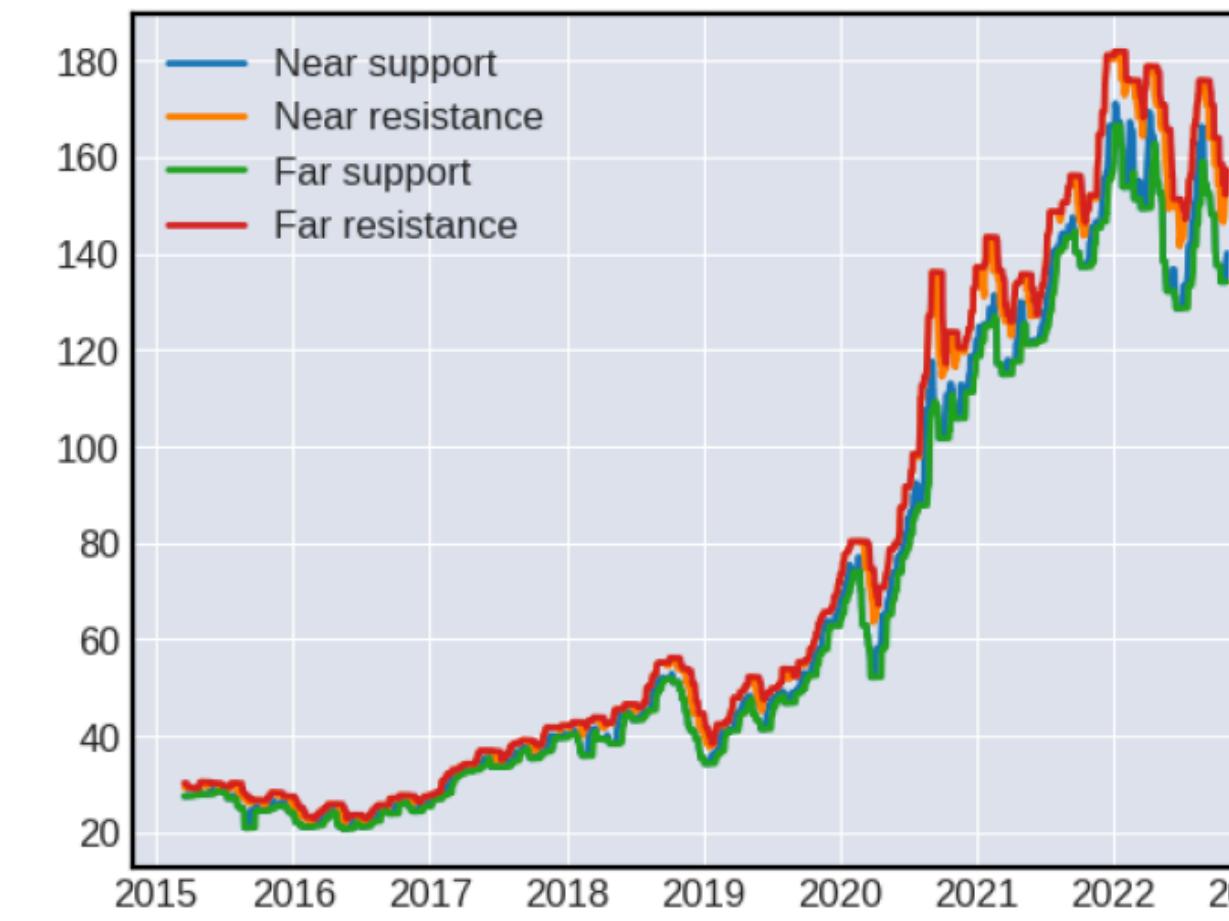


Cited from Chapter 25: "How to GRAB a Bargain Trading Futures . . . Maybe" by Mark Sleeman

# Replication: Fixed parameters



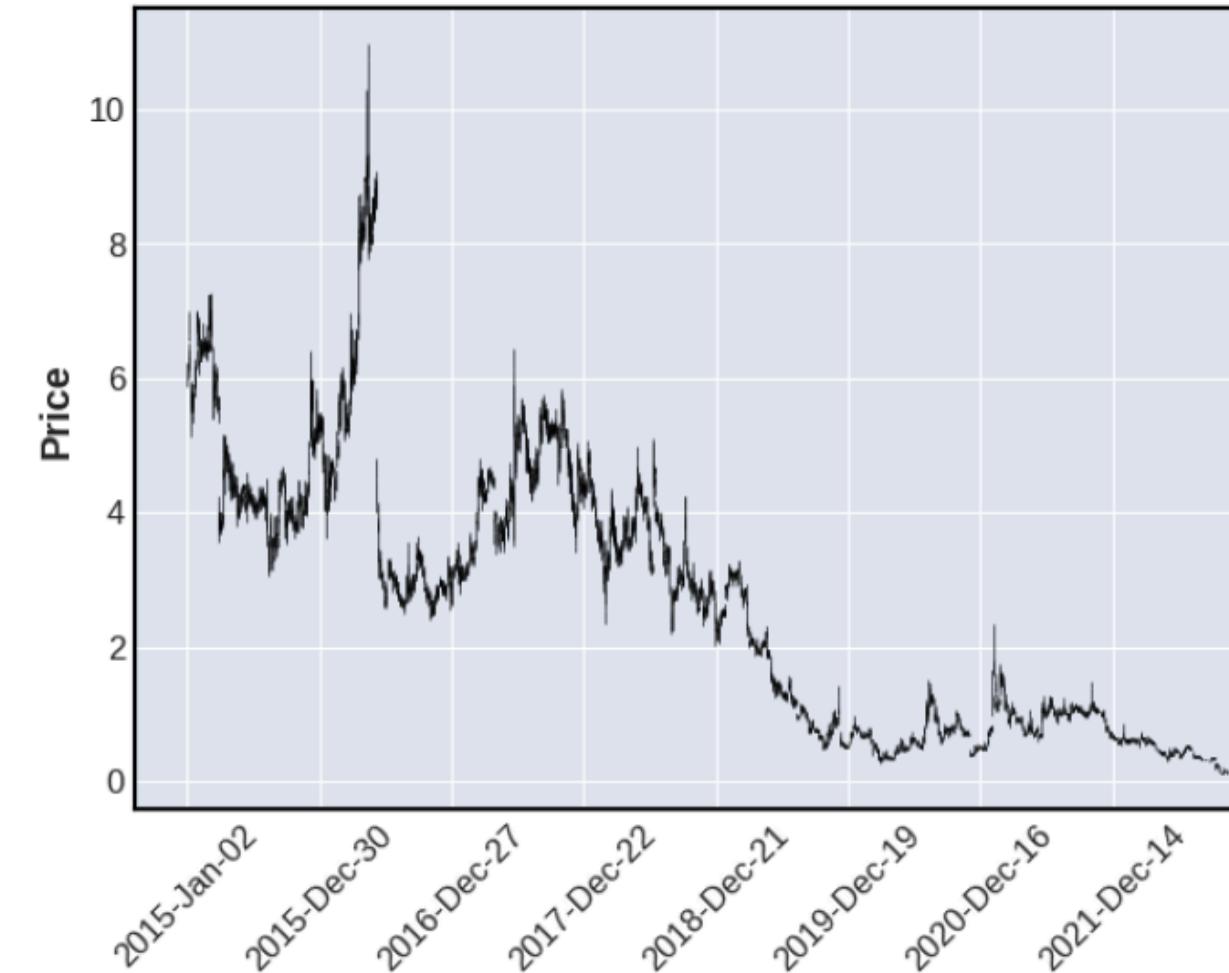
(a) AAPL OHLC



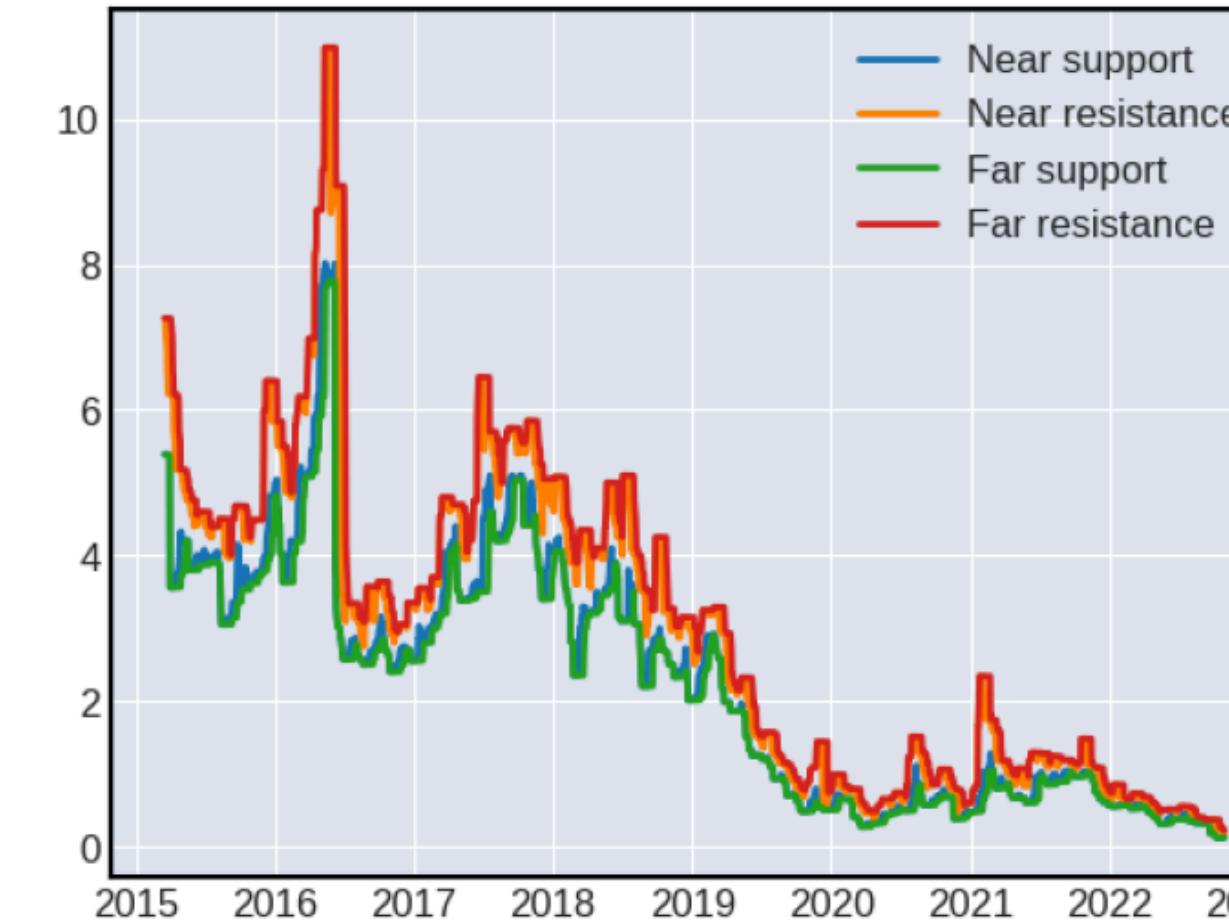
(b) AAPL levels



(c) AAPL PnL



(d) ADMP OHLC

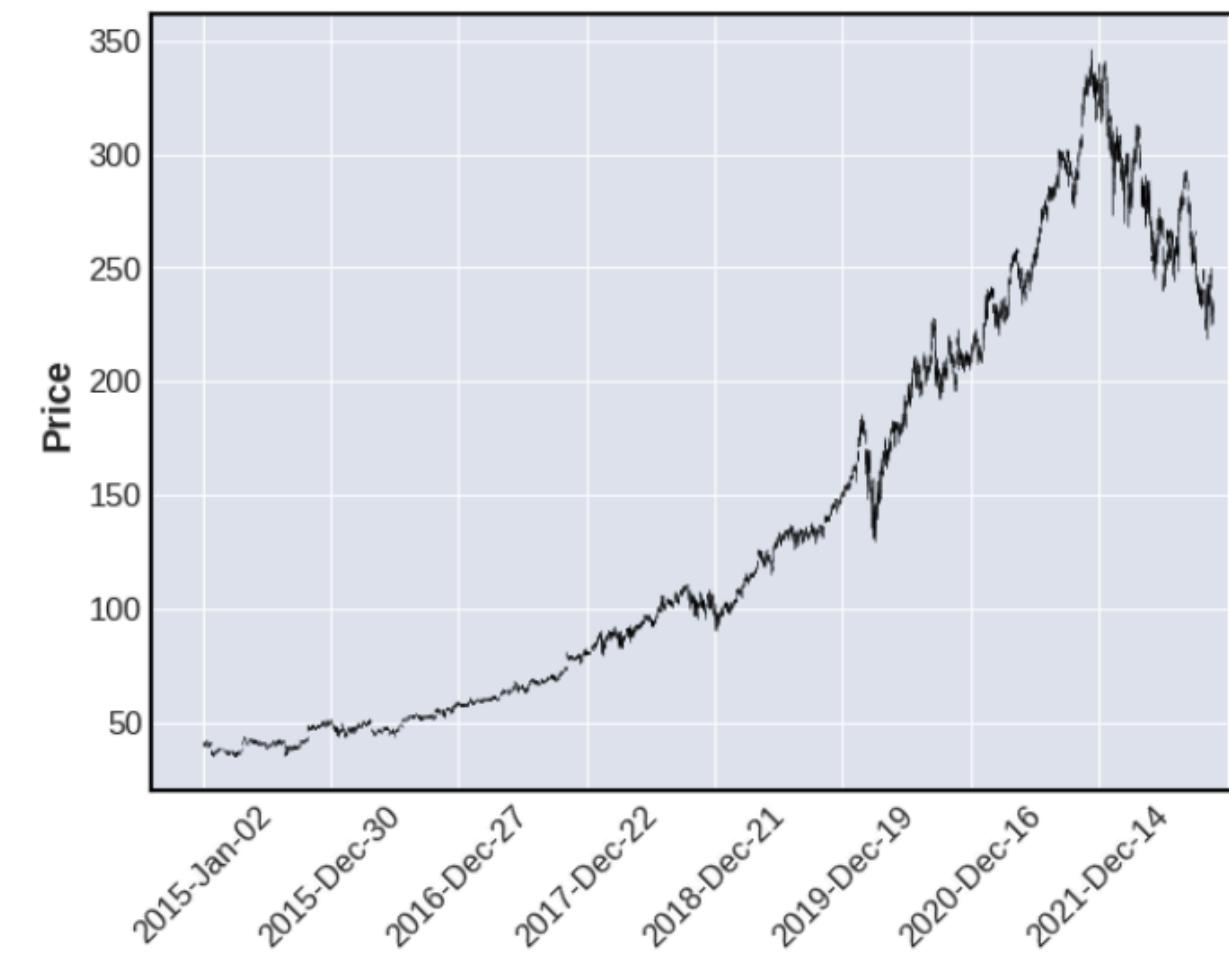


(e) ADMP levels

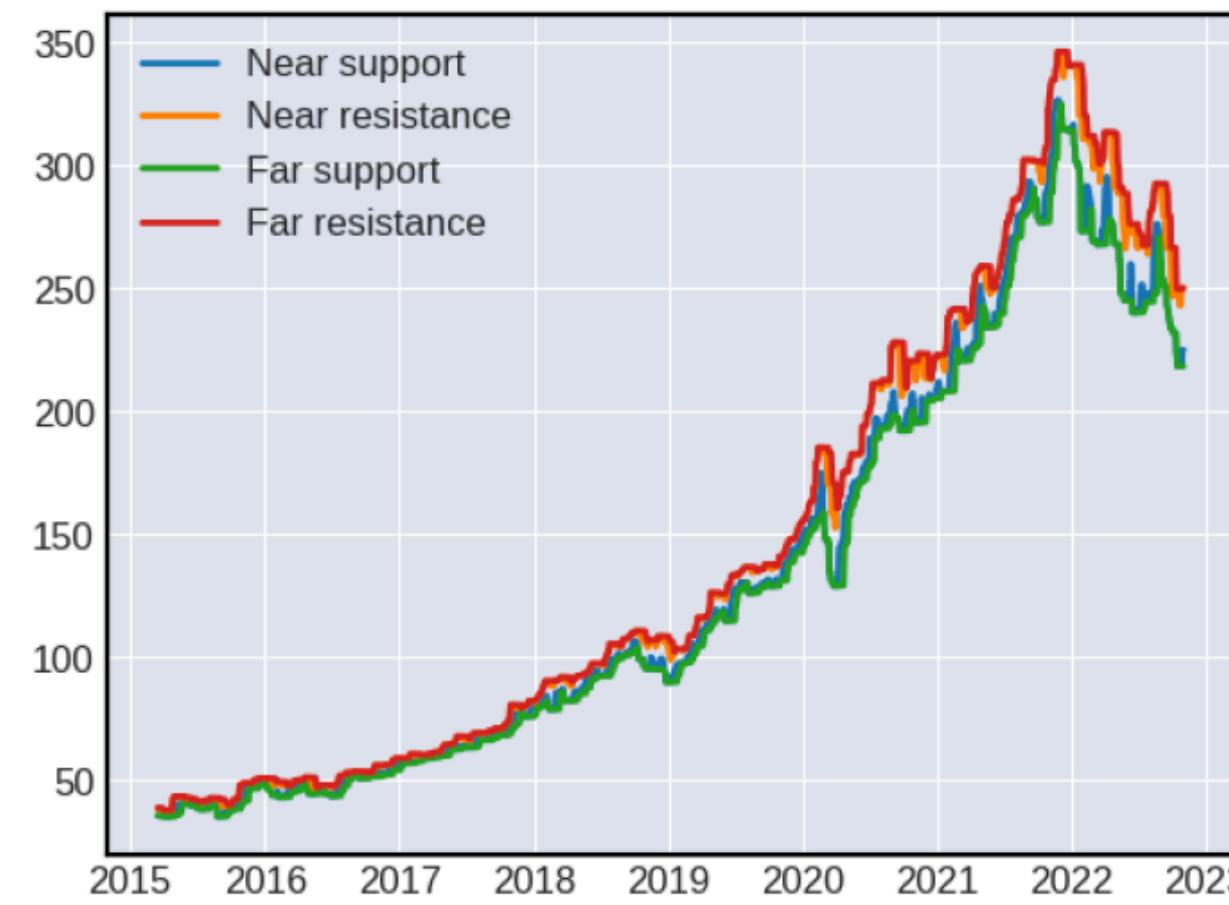


(f) ADMP PnL

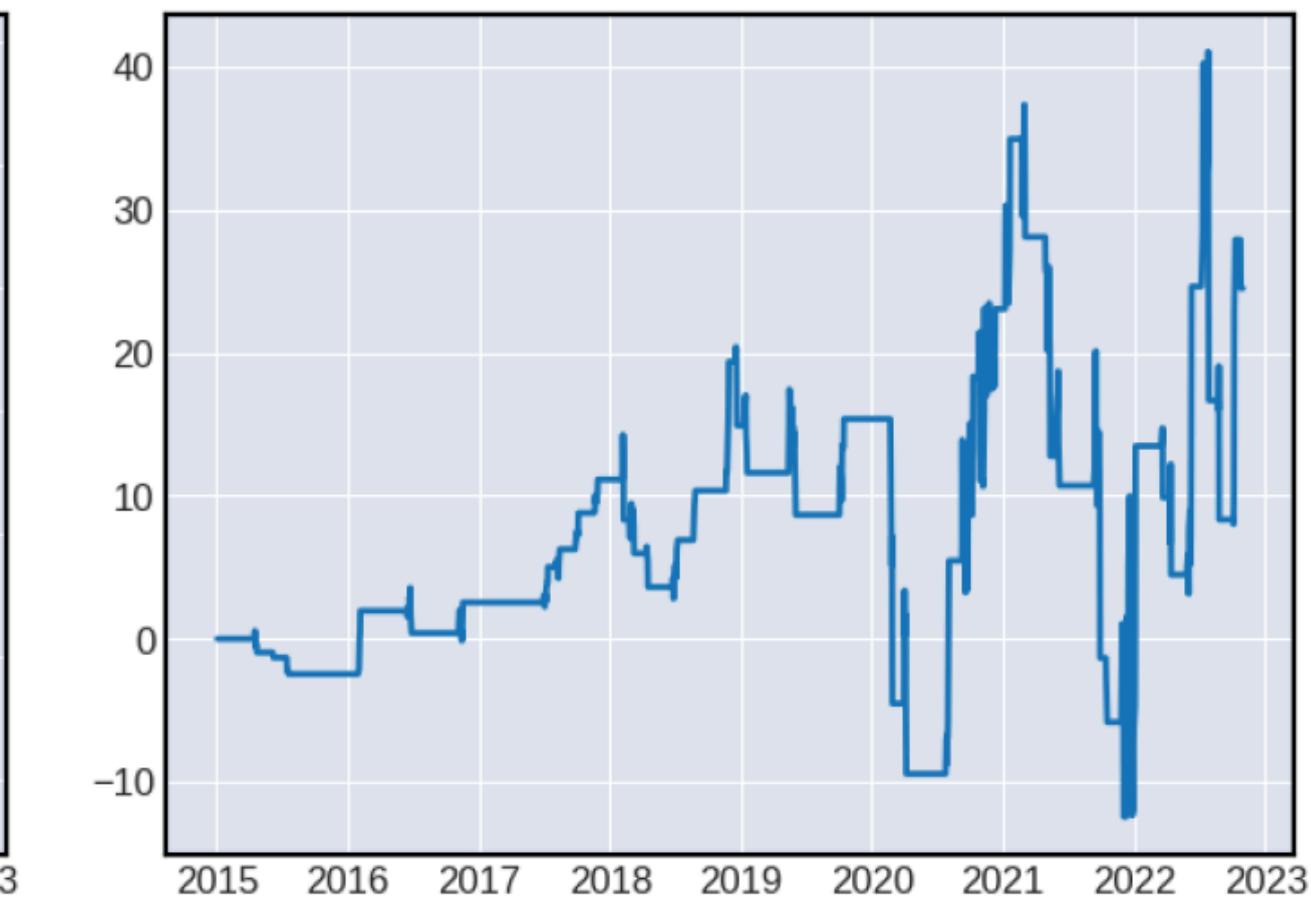
# Replication: Fixed parameters



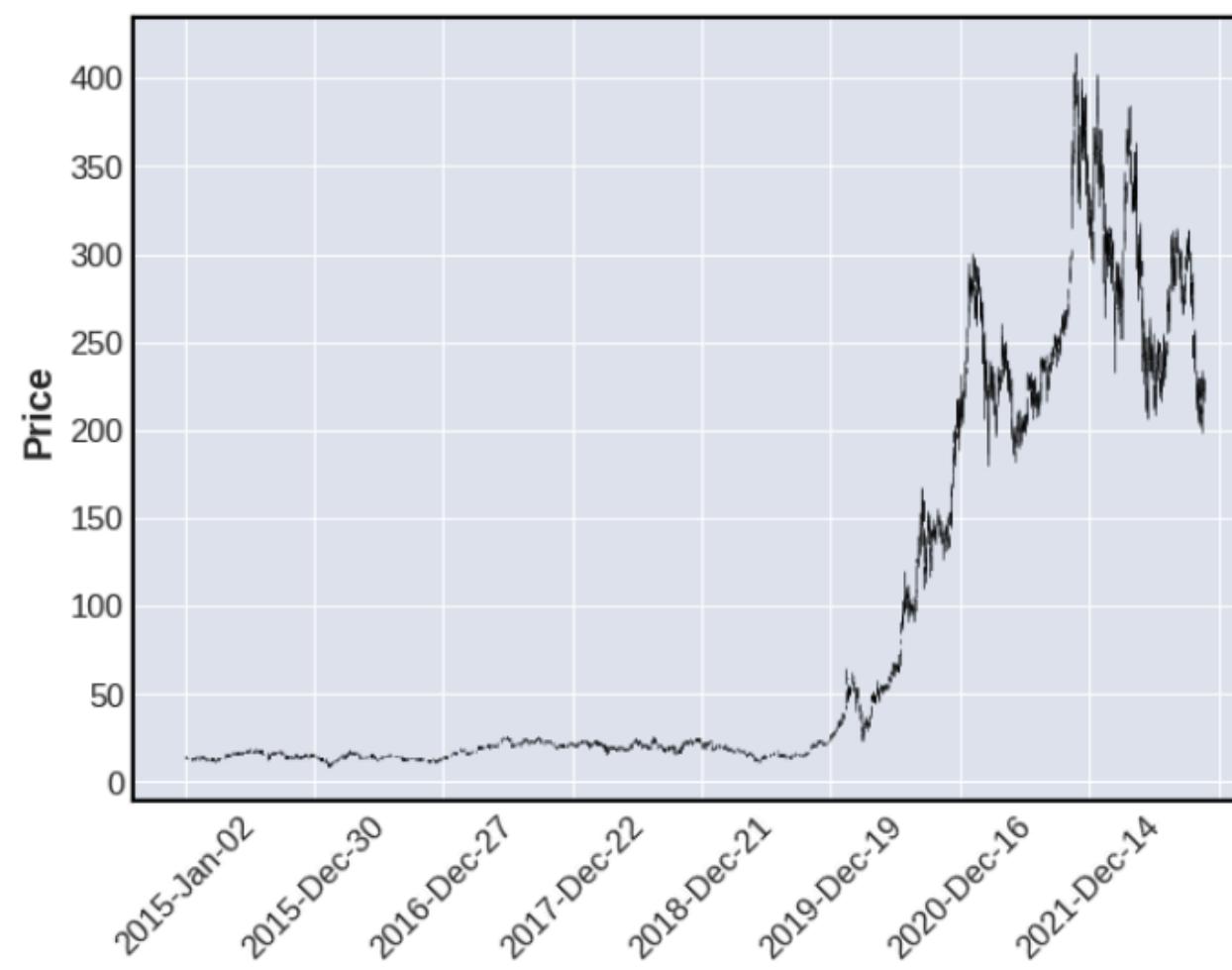
(g) MSFT OHLC



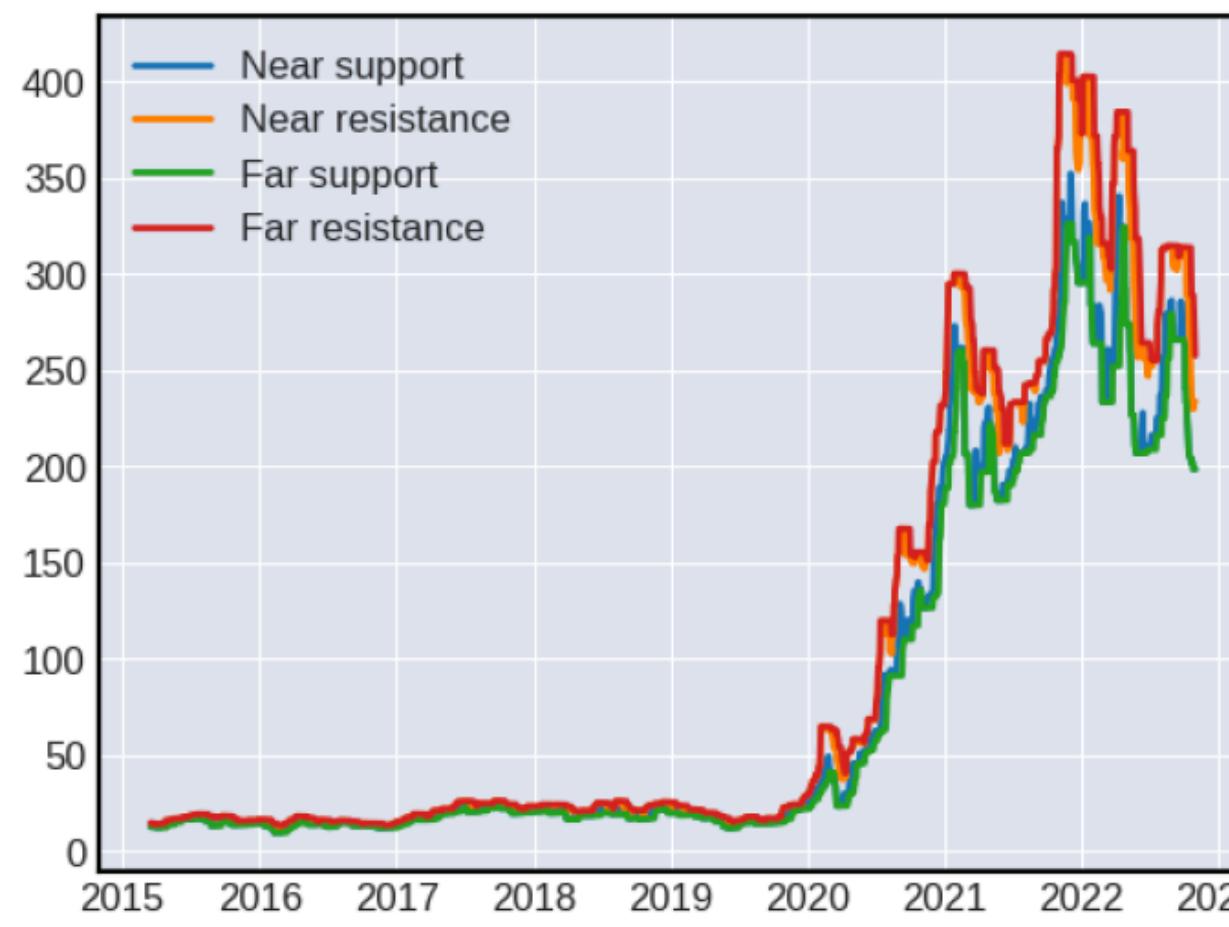
(h) MSFT levels



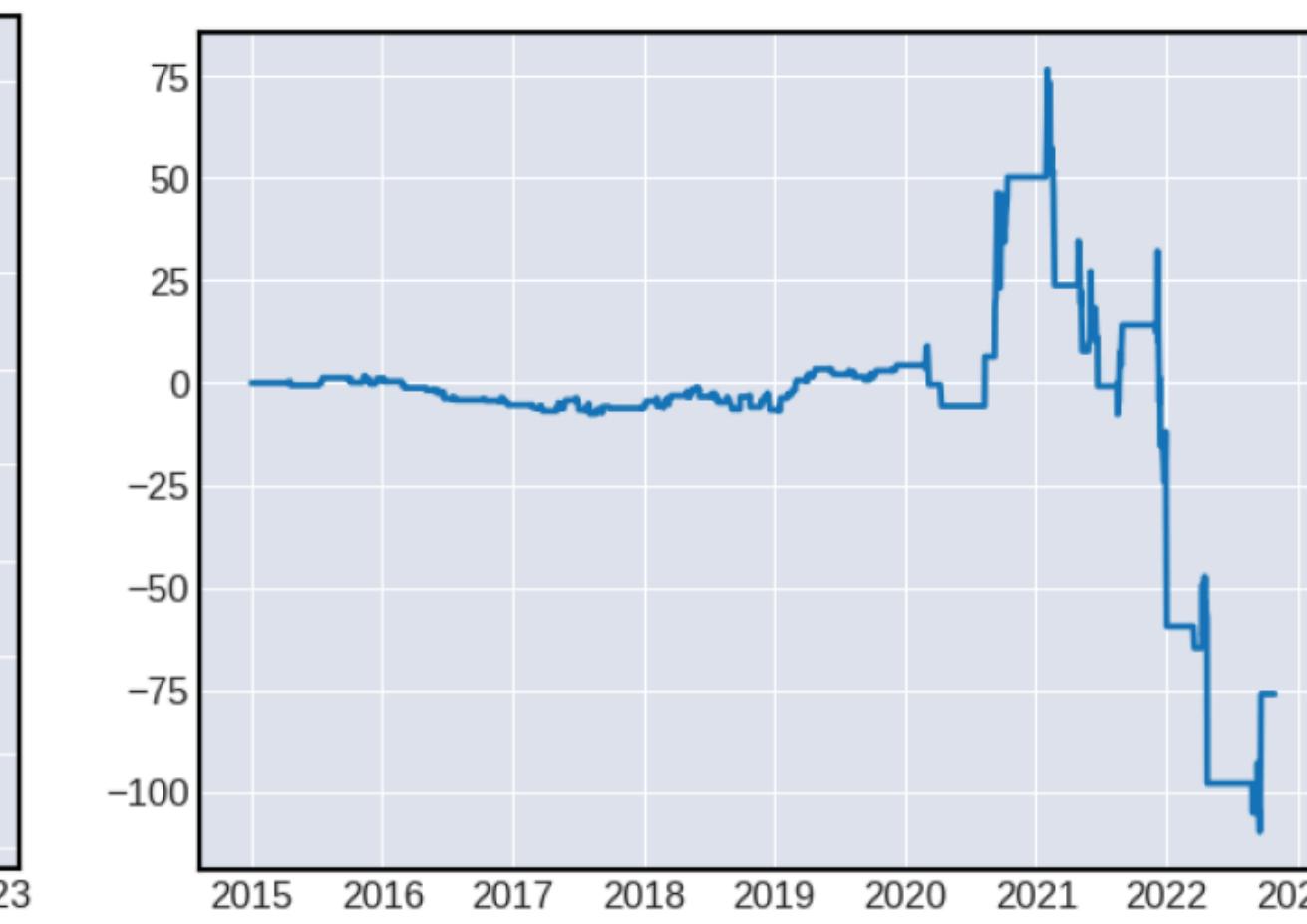
(i) MSFT PnL



(a) TSLA OHLC

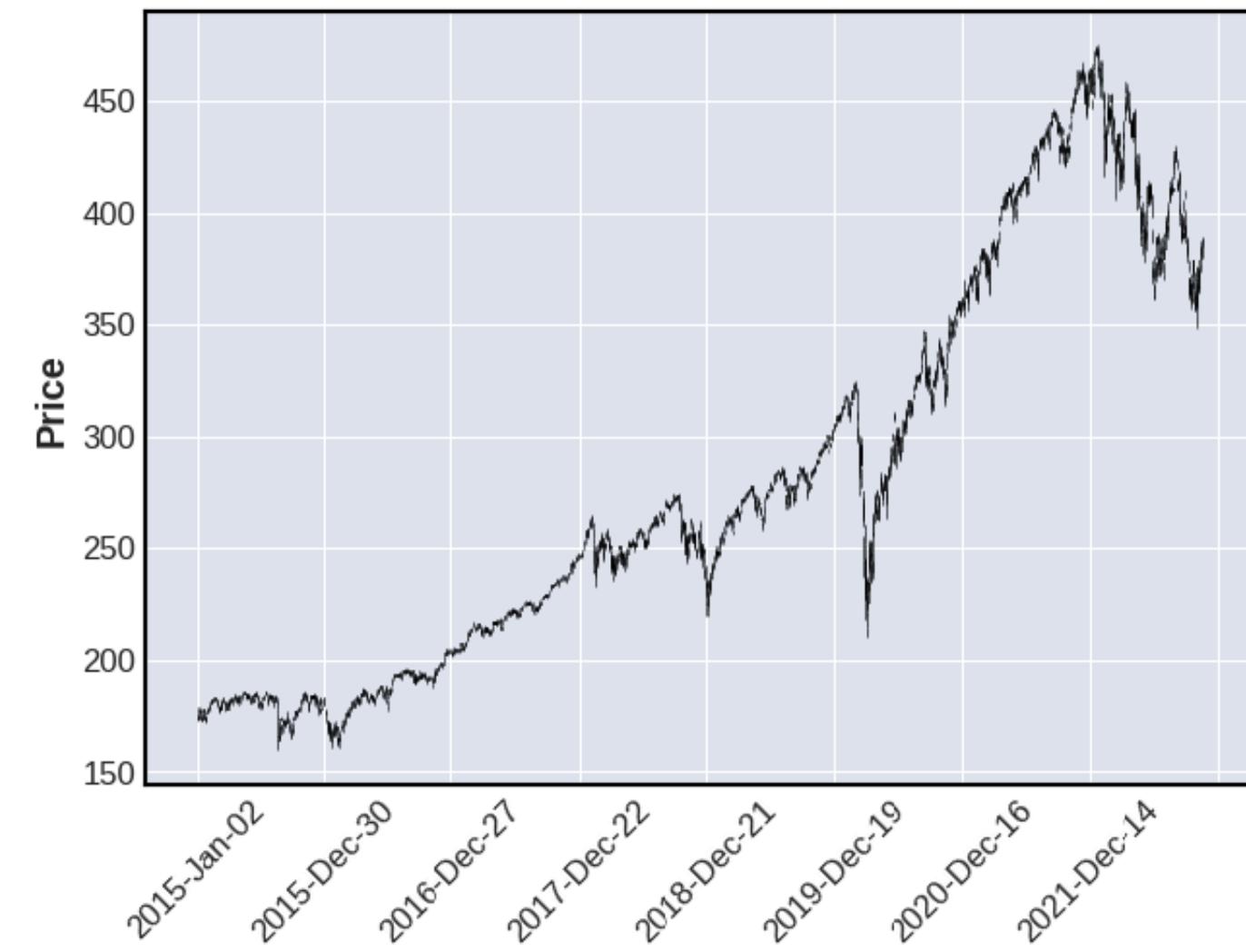


(b) TSLA levels

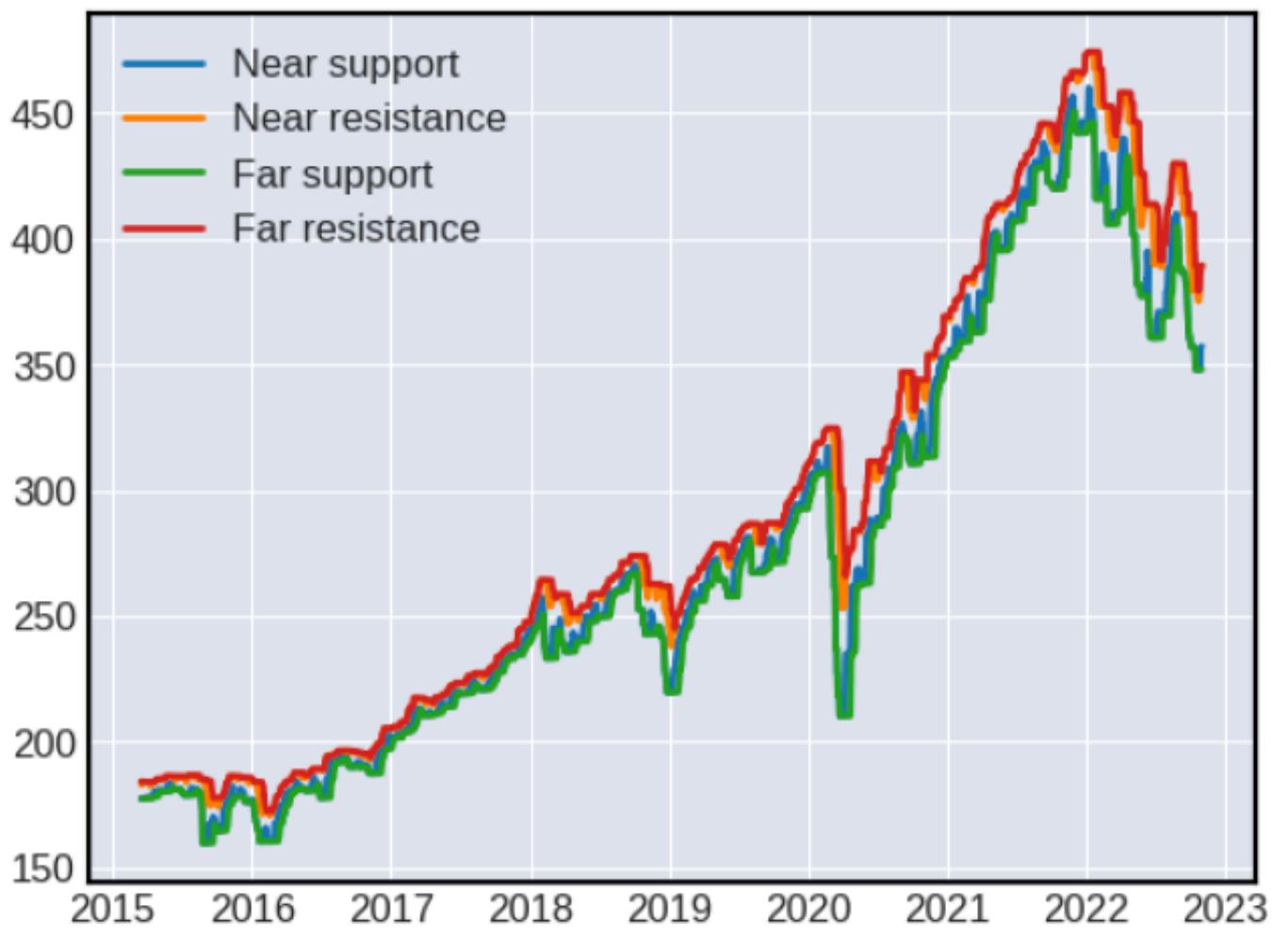


(c) TSLA PnL

# Replication: Fixed parameters



(d) SPY OHLC



(e) SPY levels



(f) SPY PnL

# Weakness

## Pointed out by the author

- Sometimes, the far and near term lines are the same. In this case, the system wants to buy and sell at the same time.
- A losing trade does not accompany every major trend reversal, as not all trend reversal trades enter, and not all trades within the major trend are profitable.
- The market is dynamic. Fixing  $N_f$ ,  $N_n$  parameters could cause entering and exiting a trade to be out of sync with market timing.

# **Weakness**

## **Pointed out by the me**

- Limit order risk.
- The exit procedures described by the author is ill-designed.
- Unclear reasoning behind choosing high and low as major trend signal.

# Improvement

$$N_f^*, N_n^* = \operatorname{argmax}_{0 < N_n < N_f < M} G(t; N_f, N_n, T)$$

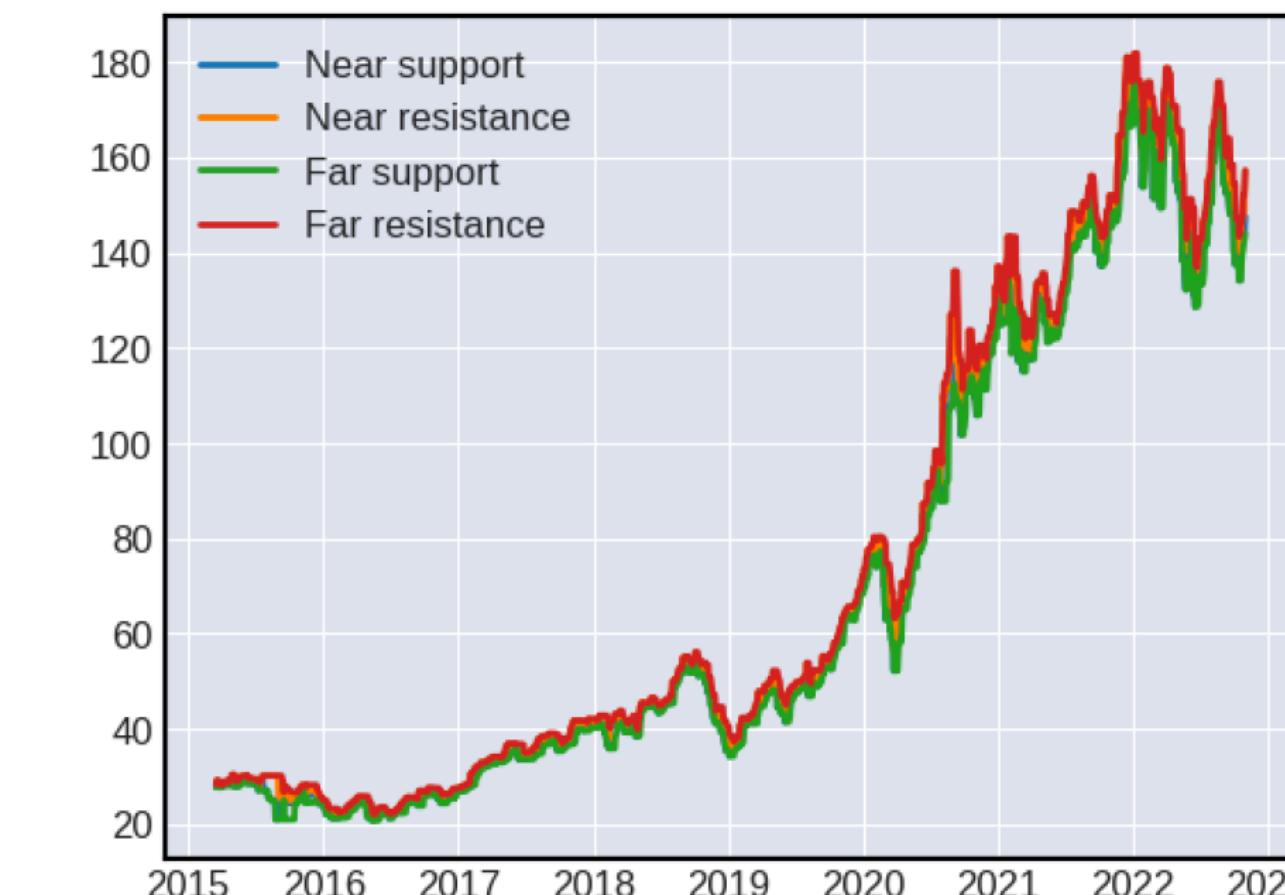
# Improvement: back testing



(b) fixed: AAPL PnL



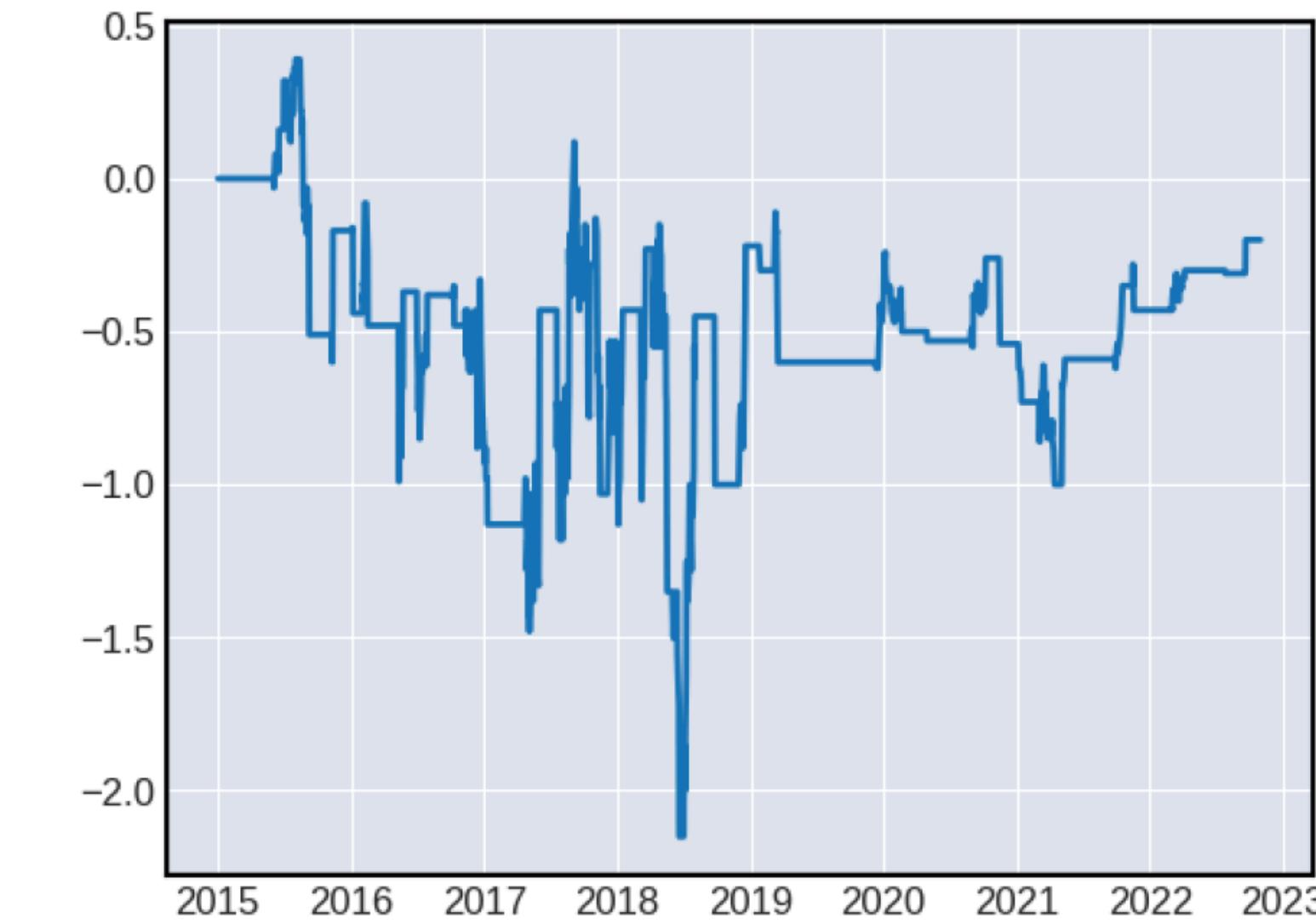
(d) optimal: AAPL PnL



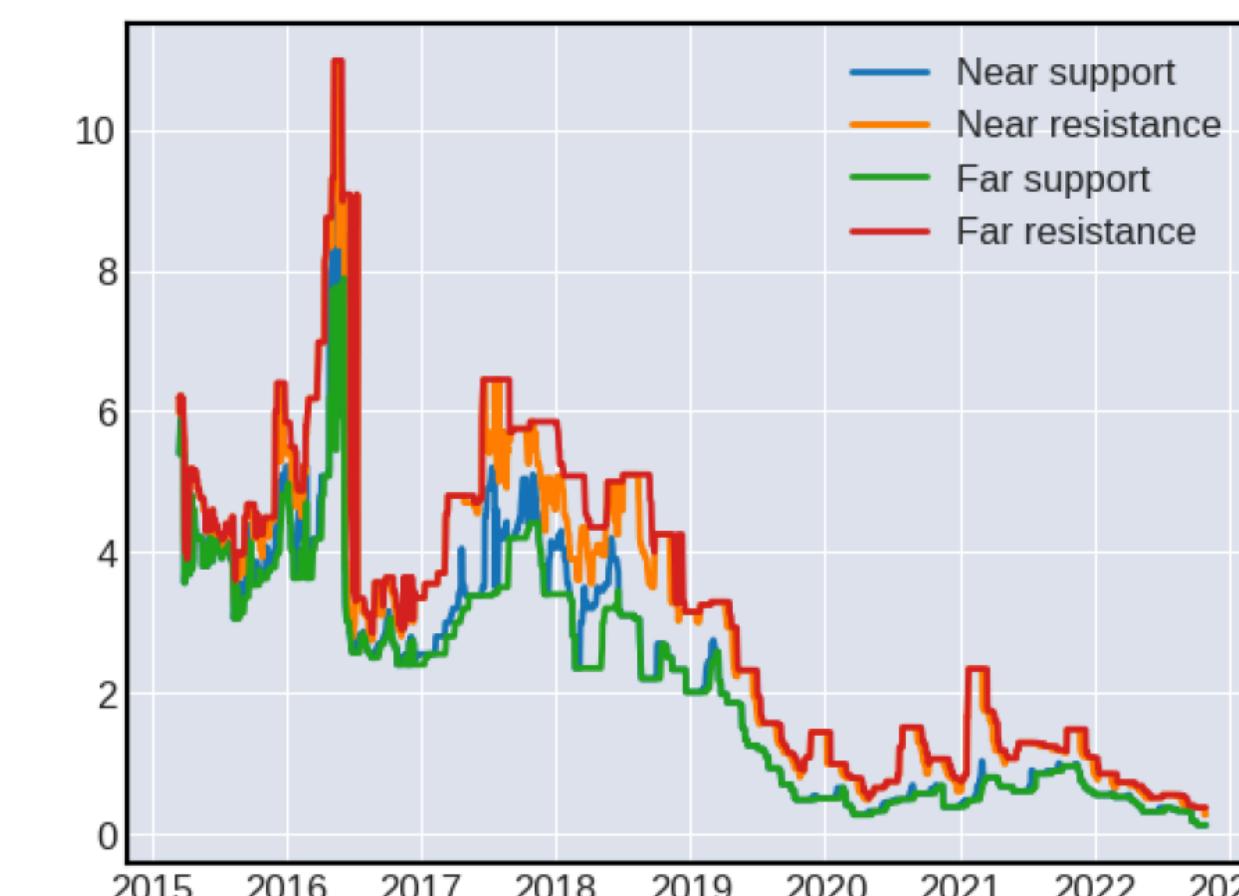
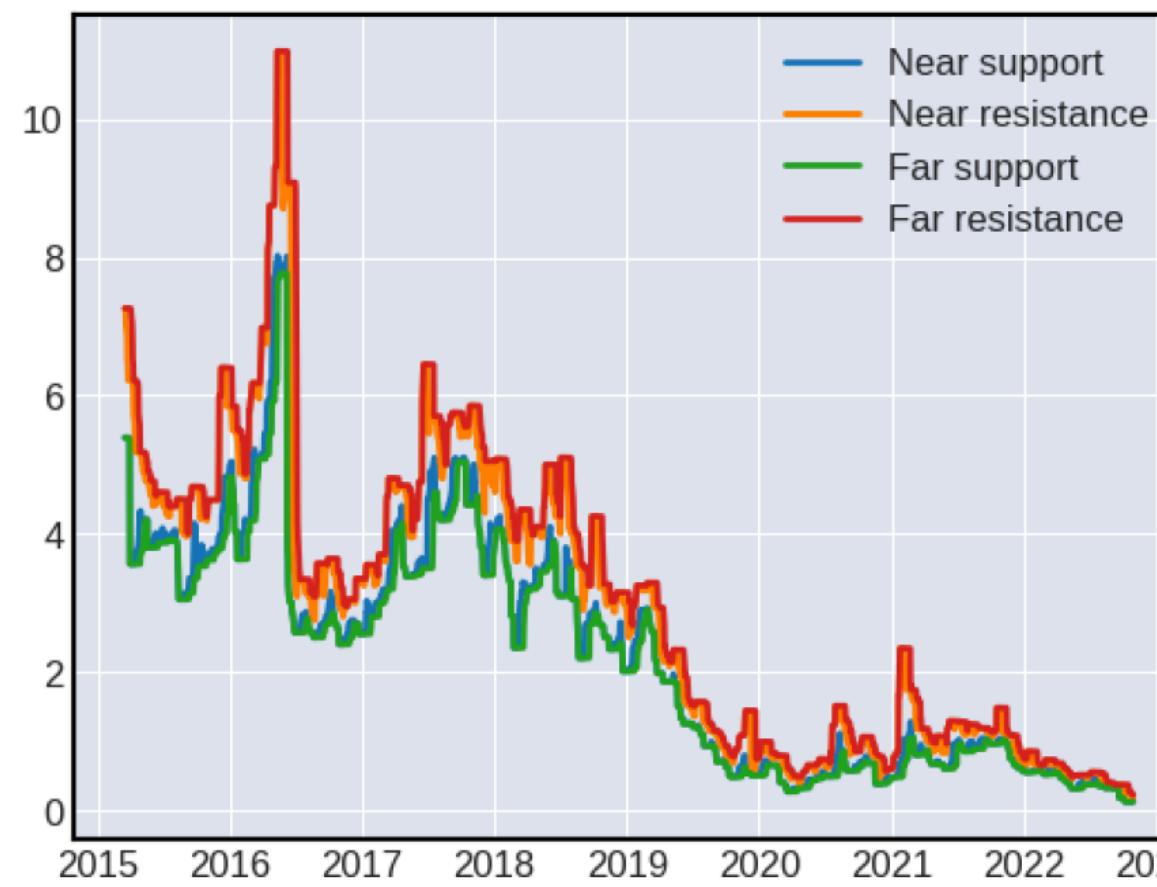
# Improvement: back testing



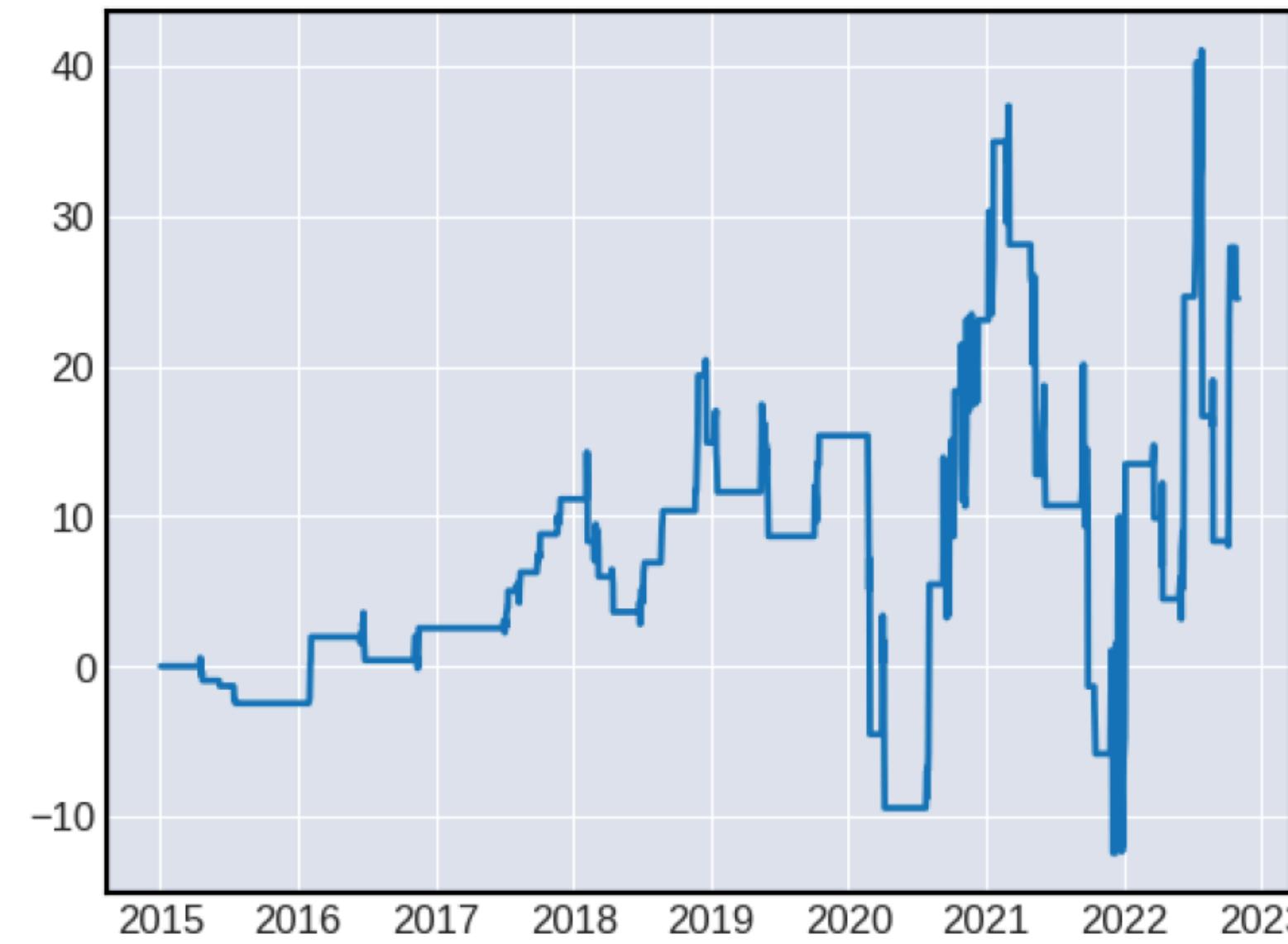
(f) fixed: ADMP PnL



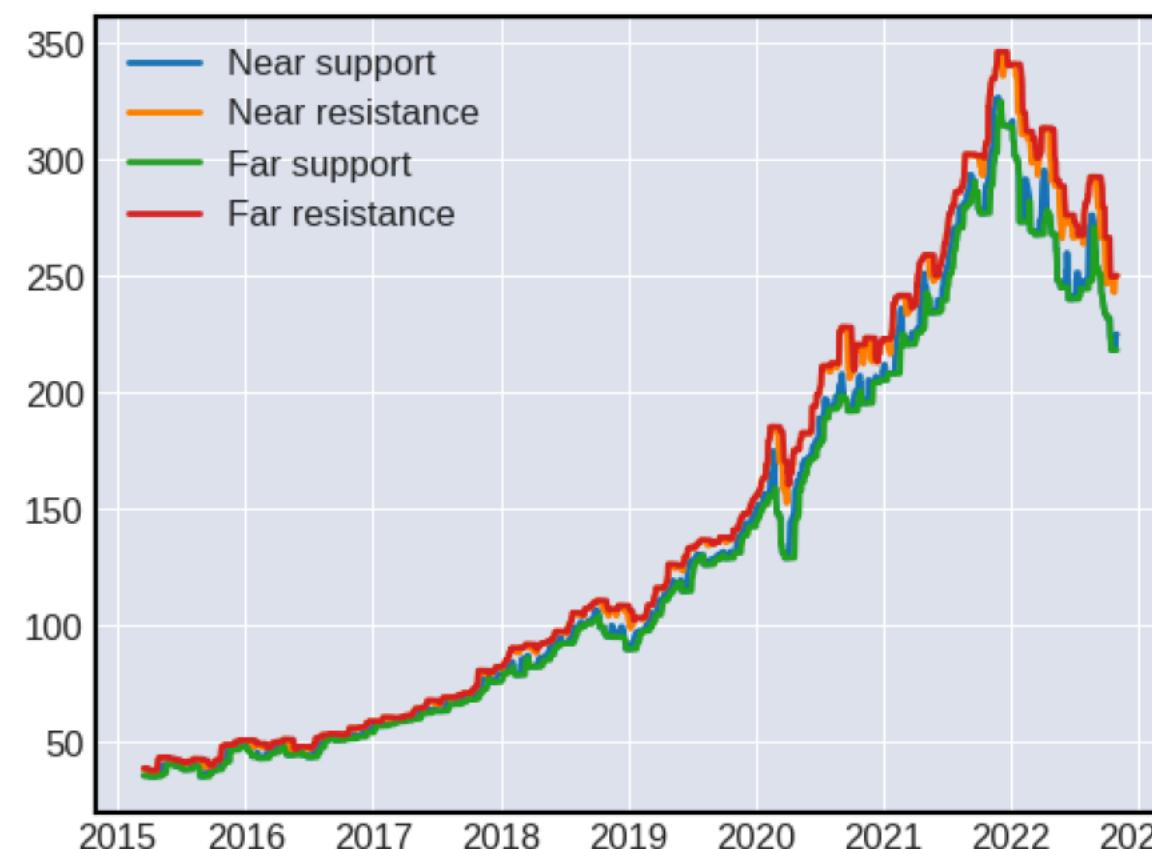
(h) optimal: ADMP PnL



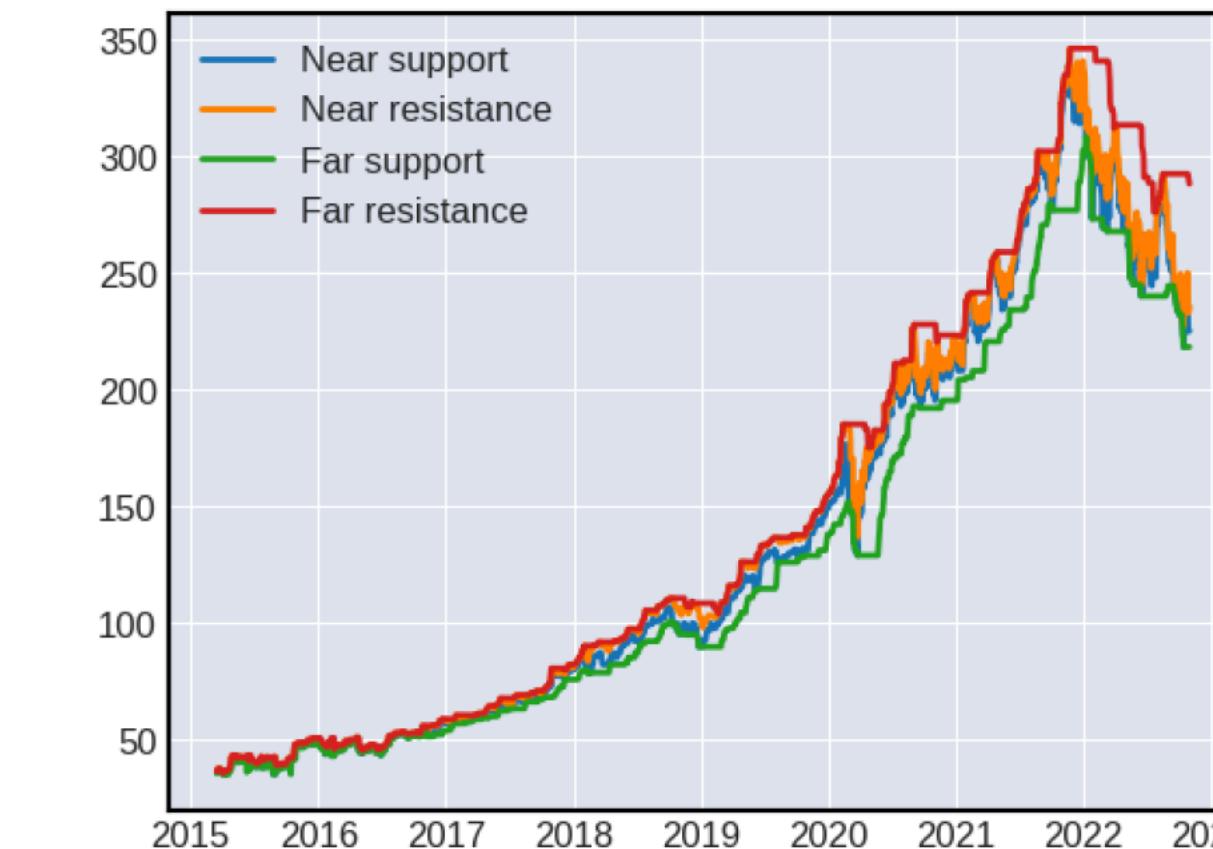
# Improvement: back testing



(j) fixed: MSFT PnL



(l) optimal: MSFT PnL



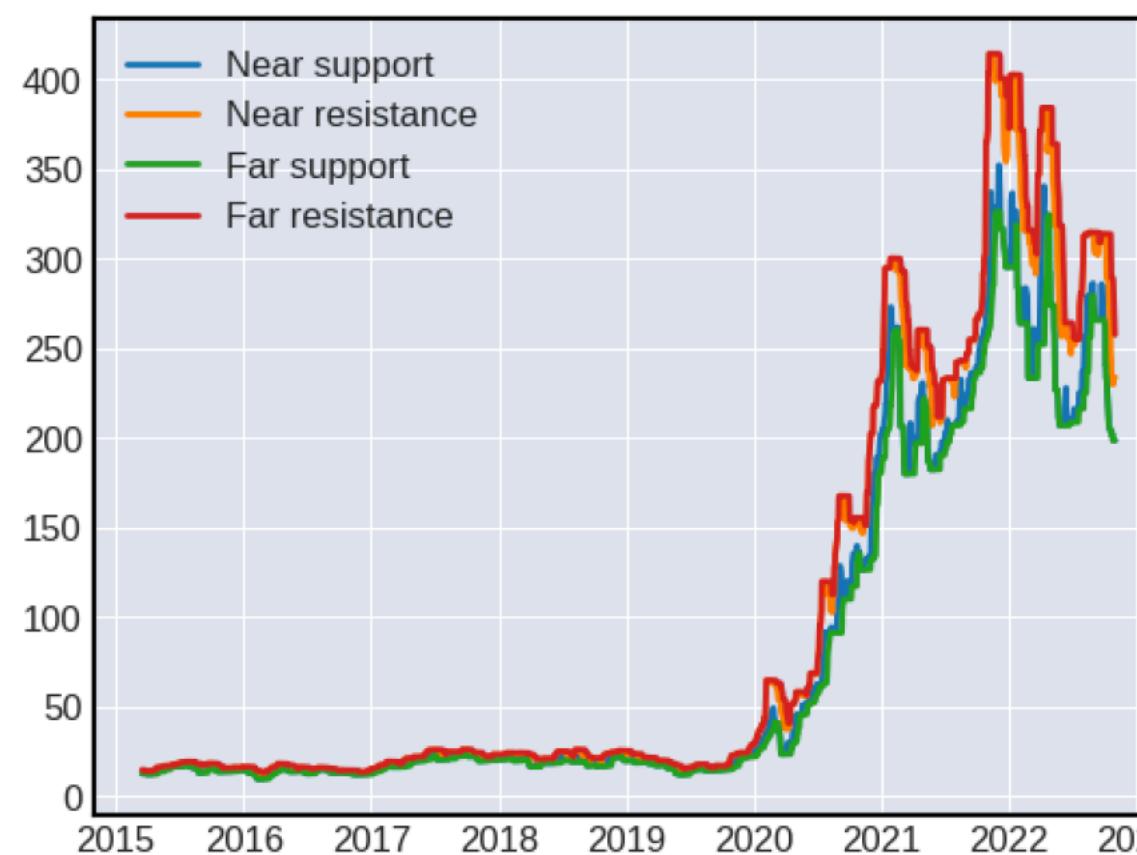
# Improvement: back testing



(n) fixed: TSLA PnL



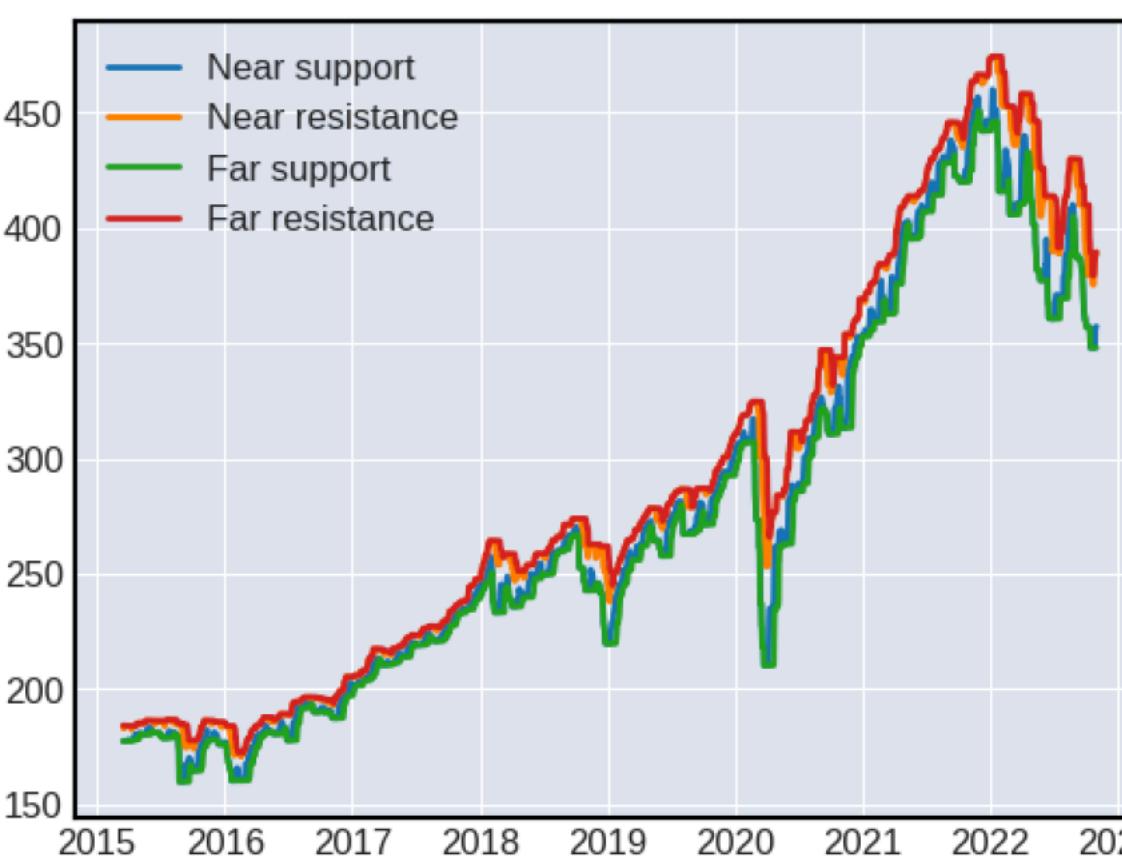
(p) optimal: TSLA PnL



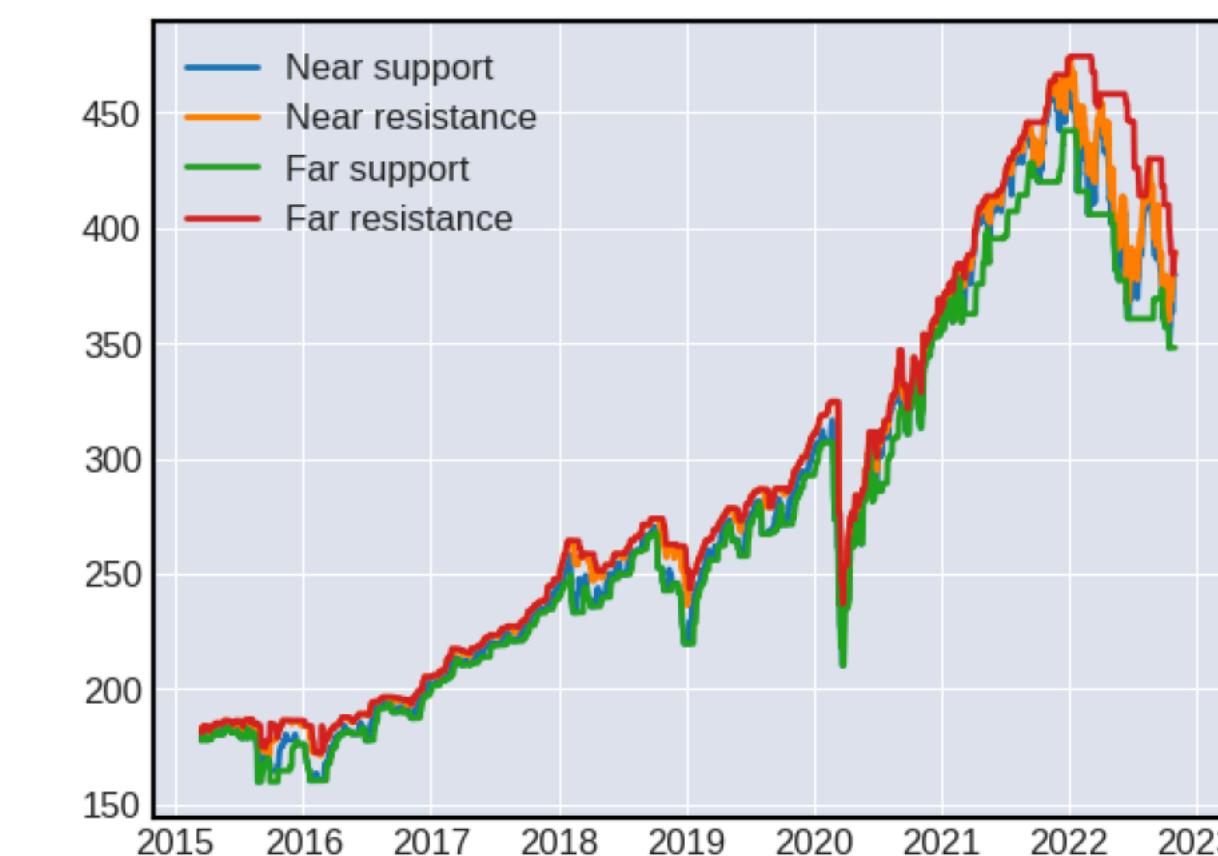
# Improvement: back testing



(r) fixed: SPY PnL



(t) optimal: SPY PnL



**Q&A**

**Thank you**