HW4

108062213 顏浩昀

使用資料

台指期

日+夜盤

5分K

樣本內:2022-05-08 ~ 2023-01-08(8個月)

樣本外:2023-01-08 ~ 2023-05-08(4個月)

手續費:百萬分之33

ADX

```
         ((Previous ADX14)*(14-1))+ Today's DX
ADX14 = ---------------------------------------
                           14
```

```
diffDI = ABS( (-DI14) - (+DI14) )
sumDI  = (-DI14) + (+DI14)

DX14 = 100 * (diffDI / sumDI)
```

```
          -DM14
-DI14 =  --------
           TR14

(Same thing for +DI14)
```

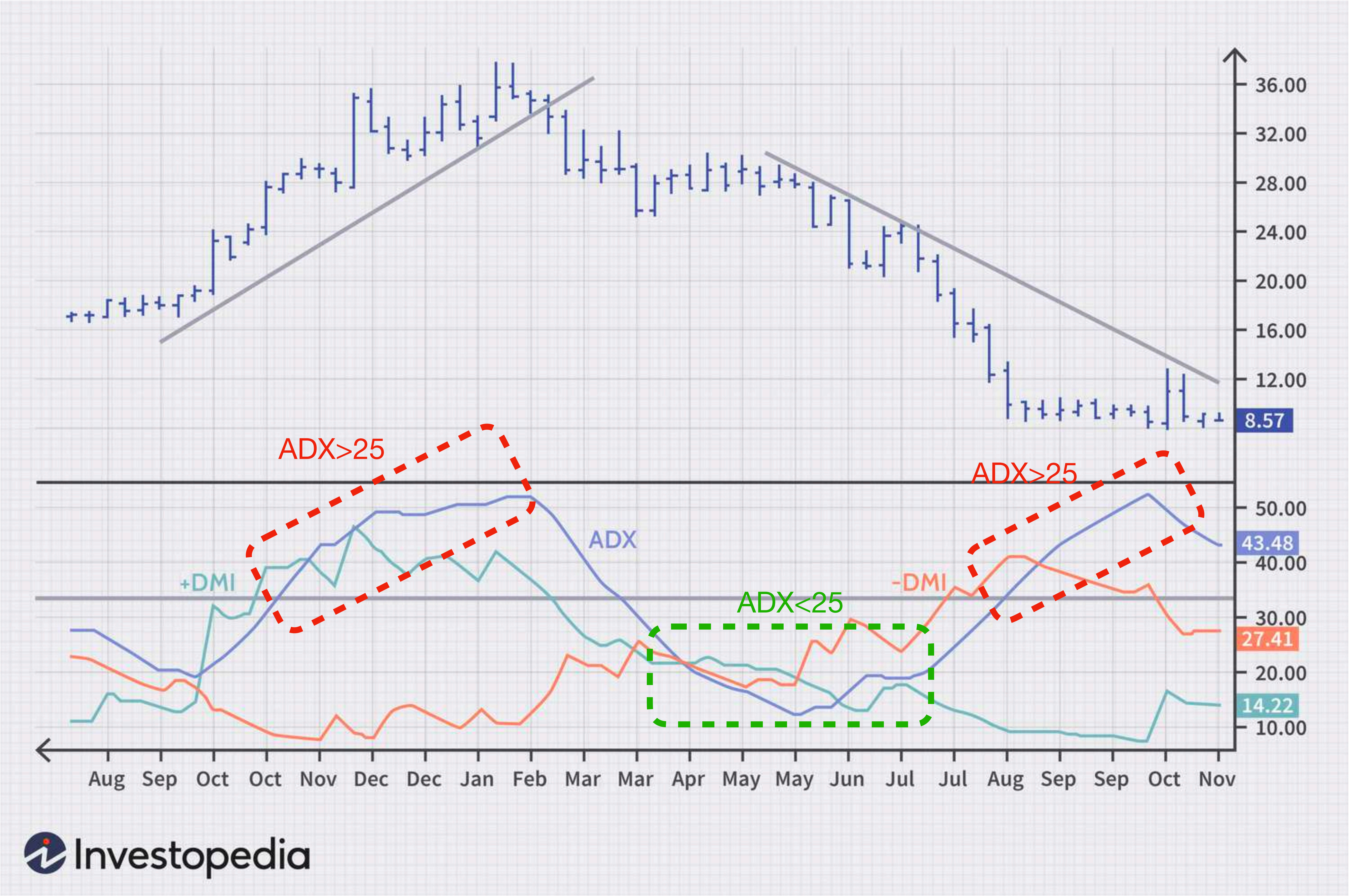
```
                                        Previous -DM14
Today's -DM14 = Previous -DM14 -   -------------- + Today's -DM1
                                             14

(Same thing for +DM14)
```

```
                                     Previous TR14
Today's TR14 = Previous TR14 - -------------- + Today's TR1
                                          14
```

```
Case 1:                     Case 2:
   C|                      A|
    |                       | C|
    | +DM1 = (C-A)         B|  | +DM1 = 0
    | -DM1 = 0                 | -DM1 = (B-D)
A|  |                         D|
 | D|
B|

Case 3:                     Case 4:
   C|                         C|
    |                      A|  |
    | +DM1 = (C-A)          |  | +DM1 = 0
    | -DM1 = 0             B|  | -DM1 = (B-D)
A|  |                          |
 |  |                         D|
B|  |
   D|

Case 5:                     Case 6:
A|                          A| C|
 | C| +DM1 = 0               |  |  +DM1 = 0
 |  | -DM1 = 0               |  |  -DM1 = 0
 | D|                        |  |
B|                          B| D|


Case 7:

   C|
A|  |
 |  | +DM=0
B|  | -DM=0
   D|
```

ADX

ADX Value	Trend Strength
0-25	Non-trending market or range-bound market
25-50	Strong trend
50-75	Very strong trend
75-100	Extremely strong trend (rarely happens and can be considered unsustainable)



PLUS_DI / MINOR_DI

```
        -DM14
-DI14 = --------
         TR14

(Same thing for +DI14)
```

RSI

```
RSI = 100 * (prevGain/(prevGain+prevLoss))
```

```
overbought = 70
oversold = 20
```

```
self.adx30 = self.I(ta.ADX, self.data.High, self.data.Low, self.data.Close, 28)
self.rsi15 = self.I(ta.RSI, self.data.Close, 13)
self.adx15 = self.I(ta.ADX, self.data.High, self.data.Low, self.data.Close, 15)
self.adx20 = self.I(ta.ADX, self.data.High, self.data.Low, self.data.Close, 20)
self.rsi10 = self.I(ta.RSI, self.data.Close, 5)
self.slope1 = self.I(ta.LINEARREG_SLOPE, self.data.Close, 12)
self.slope2 = self.I(ta.LINEARREG_SLOPE, self.rsi10, 12)
```

策略

進場

1. Time: 9:15~13:15 (避免收盤前再進行交易)
2. RSI13下破70 & ADX28突破15，空單
3. RSI13突破20 & ADX28突破15，多單
4. RSI5>40，ADX20>15，RSI沒背離，多單
5. RSI5<45，ADX20>25，RSI沒背離，空單
6. RSI5>45，ADX20>15，RSI背離 -> 做多
7. RSI5<40，ADX20>15，RSI背離 -> 做空

```
Start                     2022-05-09 08:50:00
End                       2023-05-06 05:00:00
Duration                    361 days 20:10:00
Exposure Time [%]                   17.290126
Equity Final [$]                 1211033.2008
Equity Peak [$]                  1270622.5936
Return [%]                          142.20664
Buy & Hold Return [%]               -2.663124
Return (Ann.) [%]                  114.006135
Volatility (Ann.) [%]               60.229977
Sharpe Ratio                         1.892847
Sortino Ratio                        9.175347
Calmar Ratio                        11.896724
Max. Drawdown [%]                   -9.582986
Avg. Drawdown [%]                   -1.223432
Max. Drawdown Duration      113 days 18:15:00
Avg. Drawdown Duration        1 days 22:47:00
# Trades                                  707
Win Rate [%]                        44.130127
Best Trade [%]                        2.95554
Worst Trade [%]                      -0.51748
Avg. Trade [%]                       0.034723
Max. Trade Duration           0 days 04:10:00
Avg. Trade Duration           0 days 01:03:00
Profit Factor                        1.372483
Expectancy [%]                       0.035296
SQN                                  2.689136
_strategy                          myStrategy
_equity_curve                             ...
_trades                           Size  Entry...
dtype: object
```

```
overbought = 70
oversold = 20
```

```
self.adx30 = self.I(ta.ADX, self.data.High, self.data.Low, self.data.Close, 28)
self.rsi15 = self.I(ta.RSI, self.data.Close, 13)
self.adx15 = self.I(ta.ADX, self.data.High, self.data.Low, self.data.Close, 15)
self.adx20 = self.I(ta.ADX, self.data.High, self.data.Low, self.data.Close, 20)
self.rsi10 = self.I(ta.RSI, self.data.Close, 5)
self.slope1 = self.I(ta.LINEARREG_SLOPE, self.data.Close, 12)
self.slope2 = self.I(ta.LINEARREG_SLOPE, self.rsi10, 12)
```

策略

出場

1. Time: >13:30
2. 停損停利：0.7%/3.5%
3. RSI13>70 & ADX28<15，持多單
4. RSI13<20 & ADX28<15，持空單
5. RSI5>40，ADX20>15，RSI沒背離，持空單
6. RSI5<45，ADX20>25，RSI沒背離，持多單
7. 連續4根K棒上漲，持空單
8. 連續3根K棒下跌，持多單

```
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Duration                    361 days 20:10:00
Exposure Time [%]                   17.290126
Equity Final [$]                 1211033.2008
Equity Peak [$]                  1270622.5936
Return [%]                         142.20664
Buy & Hold Return [%]              -2.663124
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SQN                                  2.689136
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_trades                         Size  Entry...
dtype: object
```
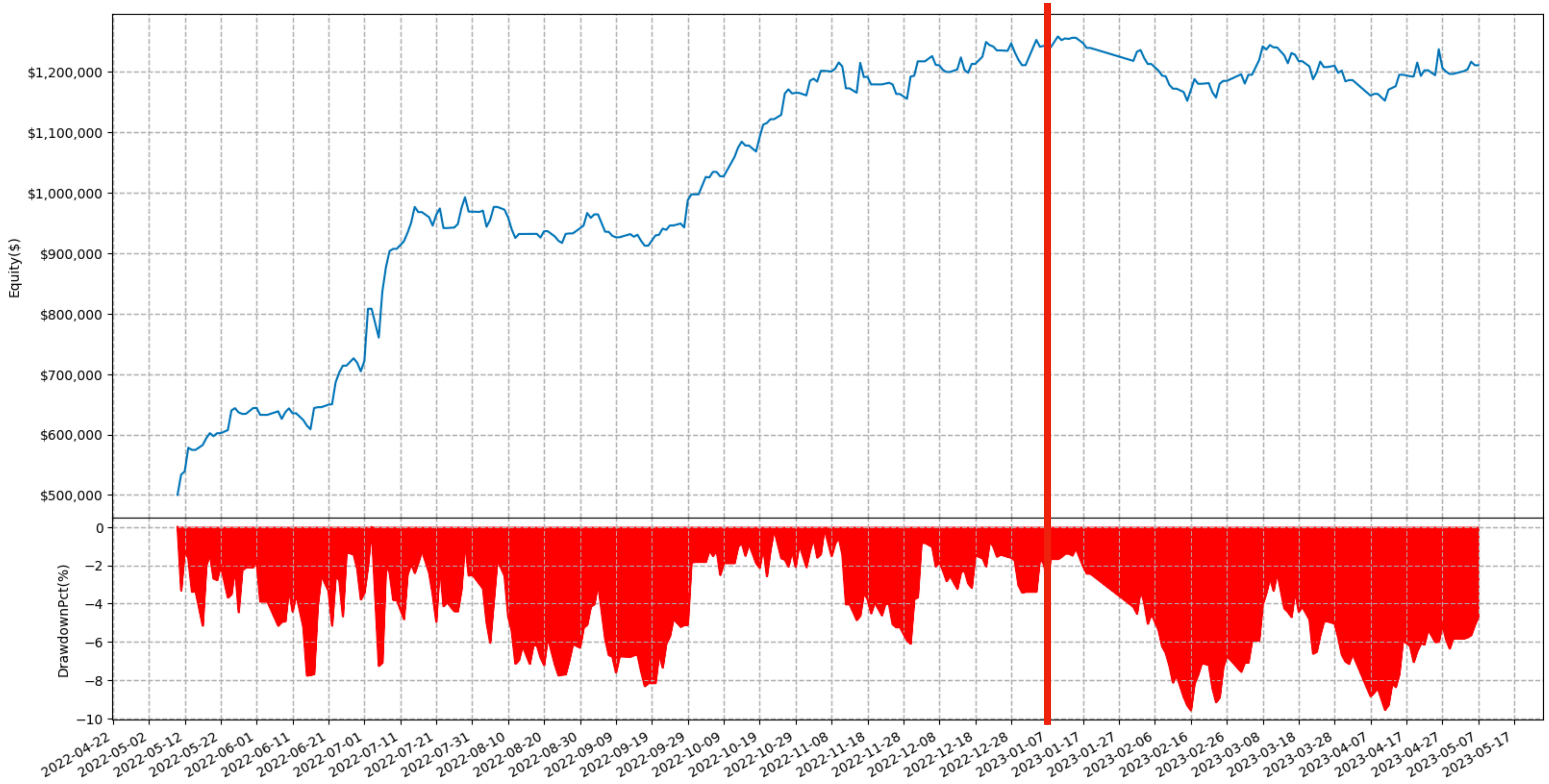
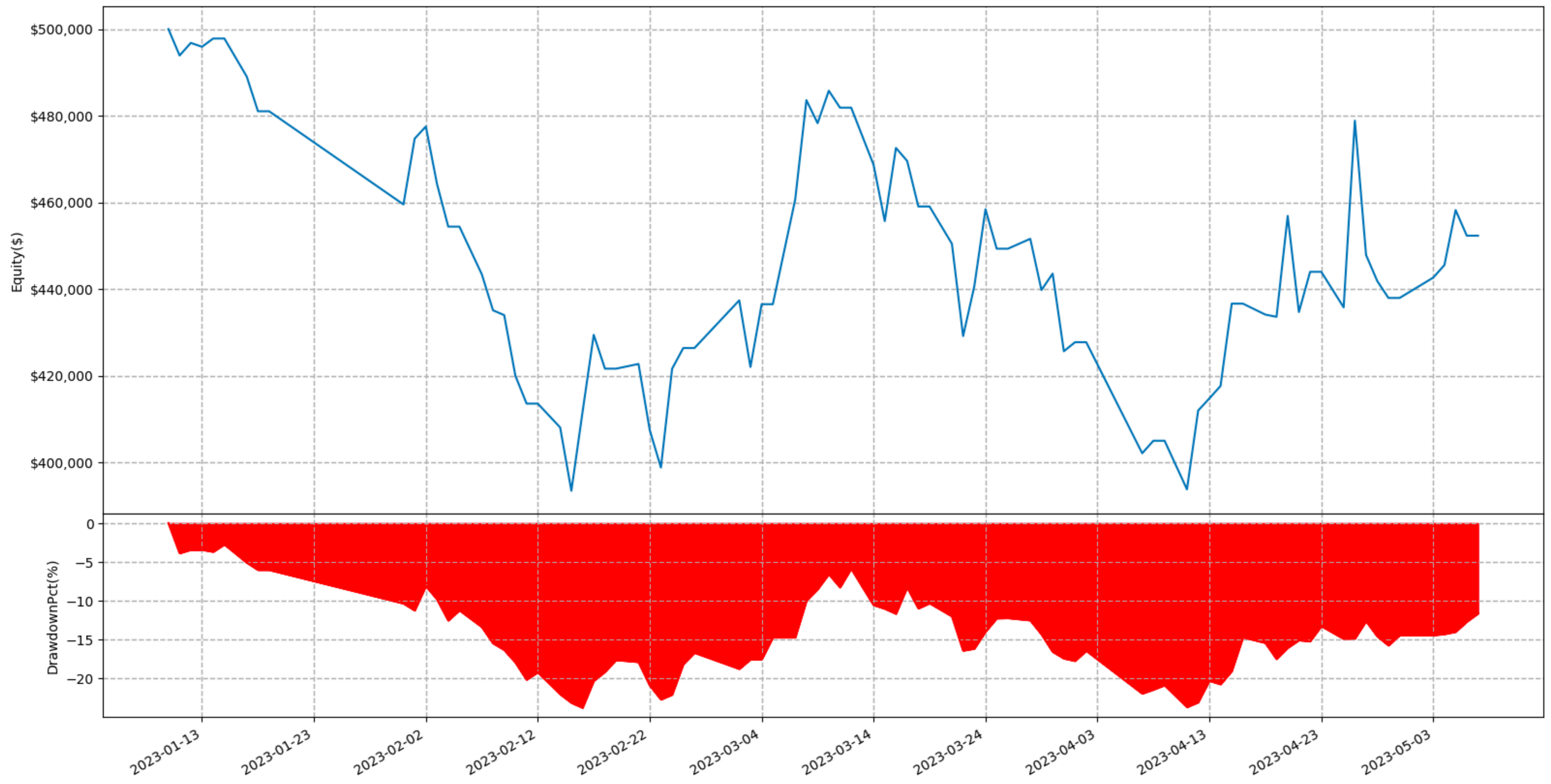

結果




```
Start                     2022-05-09 08:50:00
End                       2023-05-06 05:00:00
Duration                  361 days 20:10:00
Exposure Time [%]                   17.290126
Equity Final [$]                 1211033.2008
Equity Peak [$]                  1270622.5936
Return [%]                         142.20664
Buy & Hold Return [%]              -2.663124
Return (Ann.) [%]                 114.006135
Volatility (Ann.) [%]              60.229977
Sharpe Ratio                        1.892847
Sortino Ratio                       9.175347
Calmar Ratio                       11.896724
Max. Drawdown [%]                  -9.582986
Avg. Drawdown [%]                  -1.223432
Max. Drawdown Duration    113 days 18:15:00
Avg. Drawdown Duration      1 days 22:47:00
# Trades                                  707
Win Rate [%]                       44.130127
Best Trade [%]                       2.95554
Worst Trade [%]                     -0.51748
Avg. Trade [%]                      0.034723
Max. Trade Duration         0 days 04:10:00
Avg. Trade Duration         0 days 01:03:00
Profit Factor                       1.372483
Expectancy [%]                      0.035296
SQN                                 2.689136
_strategy                          myStrategy
_equity_curve                             ...
_trades                        Size  Entry...
dtype: object
```

樣本外




```
Start                     2023-01-09 08:50:00
End                       2023-05-06 05:00:00
Duration                    116 days 20:10:00
Exposure Time [%]                   17.642698
Equity Final [$]                   452327.956
Equity Peak [$]                   511917.3488
Return [%]                          -9.534409
Buy & Hold Return [%]                7.646576
Return (Ann.) [%]                   -25.19132
Volatility (Ann.) [%]               35.579155
Sharpe Ratio                              0.0
Sortino Ratio                             0.0
Calmar Ratio                              0.0
Max. Drawdown [%]                  -23.785789
Avg. Drawdown [%]                     -9.4592
Max. Drawdown Duration      113 days 18:15:00
Avg. Drawdown Duration       38 days 14:25:00
# Trades                                  209
Win Rate [%]                        41.626794
Best Trade [%]                       1.381183
Worst Trade [%]                     -0.516131
Avg. Trade [%]                      -0.008198
Max. Trade Duration           0 days 04:10:00
Avg. Trade Duration           0 days 01:04:00
Profit Factor                        0.917584
Expectancy [%]                      -0.007864
SQN                                 -0.407853
_strategy                          myStrategy
_equity_curve                             ...
_trades                         Size  Entry...
dtype: object
```