

1. Which method seems to have the best results?

Results of Dickey-Fuller Test:

```
Test Statistic      -0.376653
p-value            0.913924
#Lags Used         39.000000
Number of Observations Used  10940.000000
Critical Value (1%)  -3.430948
Critical Value (5%)  -2.861804
Critical Value (10%) -2.566911
dtype: float64
11037  6.019357
11038  6.019362
Name: Open, dtype: float64 6.018920900671506 6.018967493293562
Holt Estimations and Error: 6.018920900671506 6.018967493293562
0.00041606890989746625
Moving Avg. Estimations and Error: 6.019530716666678 6.019543111944457
0.00017720116920075065
May 7th, 16:00: 6.019096392987252
```

Therefore, moving average estimation is better than holt.

2. The effect of the smoothing approaches on stationarity and RMSE.

Results of Dickey-Fuller Test:

```
Test Statistic      -1.363221e+01
p-value            1.714802e-25
#Lags Used         0.000000e+00
Number of Observations Used  1.103800e+04
Critical Value (1%)  -3.430943e+00
Critical Value (5%)  -2.861802e+00
Critical Value (10%) -2.566909e+00
```

dtype: float64

Results of Dickey-Fuller Test:

```
Test Statistic      -0.273133
p-value            0.929224
#Lags Used         16.000000
Number of Observations Used  10962.000000
Critical Value (1%)  -3.430947
Critical Value (5%)  -2.861804
Critical Value (10%) -2.566910
```

dtype: float64

```
[6.019094126051783, 6.0191998571596885] 6.018731265192375 6.018802017969073
```

Holt Estimations and Error: 6.018731265192375 6.018802017969073
0.0003807519040530992
Moving Avg. Estimations and Error: 6.019006572386946 6.019004352646157
0.0001514722070834692
May 7th, 16:00: 6.018617762586815

3. Choosing a window size of 60 to min on observing changes in trend. Knowing this, would you change your window size? Would your decision be different for both estimations?

Results of Dickey-Fuller Test:

Test Statistic -0.431268
p-value 0.904746
#Lags Used 0.000000
Number of Observations Used 11038.000000
Critical Value (1%) -3.430943
Critical Value (5%) -2.861802
Critical Value (10%) -2.566909
dtype: float64

Results of Dickey-Fuller Test:

Test Statistic -0.431268
p-value 0.904746
#Lags Used 0.000000
Number of Observations Used 11038.000000
Critical Value (1%) -3.430943
Critical Value (5%) -2.861802
Critical Value (10%) -2.566909
dtype: float64

[6.0196, 6.0196] 6.019564992101812 6.0195620407889425
Holt Estimations and Error: 6.019564992101812 6.0195620407889425
3.651338548792338e-05
Moving Avg. Estimations and Error: 6.0193795000000006 6.0195963250000055
0.000155938698888884813
May 7th, 16:00: 6.019592770491799