Day10

March 6, 2021

0.1 Day 10 - Moving Average

The moving average (MA) is a technical analysis tool that tries to cut out the noise from the trend, by updating the average price in a given period. In theory, if the price is above the MA the trend is up, and vice versa. The window of the moving average strongly depends on the trader's time horizon, but a common range goes from 10 to 200.

0.1.1 Implementation

```python
[23]: import pandas as pd
      import numpy as np
      import yfinance as yf

      import plotly.graph_objects as go
```

```python
[24]: """
          :param ticker: stock's symbol
          :param start: history start date
          :param end: history end date
          :return: stock's historical data
      """
      def get_data(ticker,start="2018-03-25", end="2021-03-25"):

          t = yf.Ticker(ticker)

          return t.history(start=start, end=end)
```
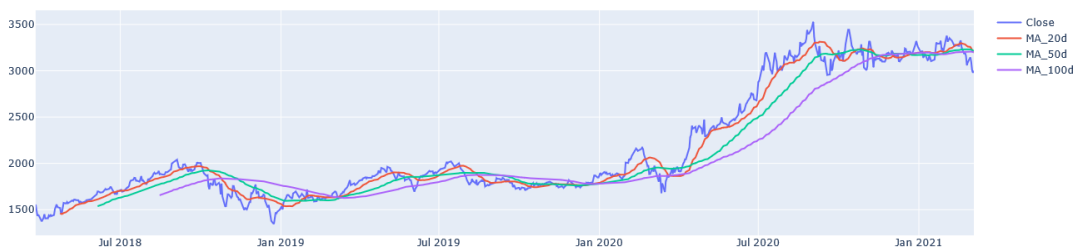
```python
[25]: """
          :param close: stock's close data
          :param length: moving average length
          :return: stock's moving average
      """
      def get_MA(close,length=20):
          return close.rolling(window=length).mean()
```

```python
[26]: amzn_history  = get_data('AMZN')
      amzn_close = amzn_history['Close']
```

```
ma_20 = get_MA(amzn_close,length=20)
ma_50 = get_MA(amzn_close,length=50)
ma_100 = get_MA(amzn_close,length=100)
```

[27]:
```
fig = go.Figure()

fig.add_trace(go.Scatter(x=amzn_history.index, y=amzn_history['Close'],␣
 ↪name='Close'))
fig.add_trace(go.Scatter(x=amzn_history.index, y=ma_20, name='MA_20d'))
fig.add_trace(go.Scatter(x=amzn_history.index, y=ma_50, name='MA_50d'))
fig.add_trace(go.Scatter(x=amzn_history.index, y=ma_100, name='MA_100d'))
```


0.1.2 Strategy 1: Crossover

When the price crosses above or below a moving average to signal a potential change in trend.

[ ]:
```
"""
    -- to do
"""
```

0.1.3 Strategy 2:

Apply two moving averages to a chart: one longer and one shorter. When the shorter-term MA crosses above the longer-term MA, it's a buy signal, as it indicates that the trend is shifting up. This is known as a "golden cross."

Meanwhile, when the shorter-term MA crosses below the longer-term MA, it's a sell signal, as it indicates that the trend is shifting down. This is known as a "dead/death cross."

[ ]:
```
"""
    -- to do
"""
```

0.1.4 Disadvantages

- the future is unpredictable by nature
- it does not work well with volatile stocks (e.g. cryptocurrencies)

source : https://www.investopedia.com/articles/active-trading/052014/how-use-moving-average-buy-stocks.asp