Stock_Downside_Risk_Chart

September 29, 2021

1 Stock Downside Risk Chart

```python
[1]: # Library
     import pandas as pd
     import numpy as np
     import matplotlib.pyplot as plt

     import warnings
     warnings.filterwarnings("ignore")

     from pandas_datareader import data as pdr
     import yfinance as yf
     yf.pdr_override()
```

```python
[2]: start = '2019-01-01' #input
     end = '2020-07-01' #input
     symbol = 'AMD' #input
```

```python
[3]: stocks = yf.download(symbol, start=start, end=end)['Adj Close']
```

```
[*********************100%***********************]  1 of 1 completed
```

```python
[4]: stocks_returns = stocks.pct_change().dropna()
```

```python
[5]: def downside_risk(stock_returns):
         dr = stock_returns[stock_returns < stock_returns.mean()].std(skipna = True)
     ↪* np.sqrt(252)
         return dr
```

```python
[6]: # Compute the running Downside Risk
     running = [downside_risk(stocks_returns[i-90:i]) for i in range(90,
     ↪len(stocks_returns))]

     # Plot running Downside Risk up to 100 days before the end of the data set
     _, ax1 = plt.subplots(figsize=(12,8))
     ax1.plot(range(90, len(stocks_returns)-100), running[:-100])
     ticks = ax1.get_xticks()
```

```python
ax1.set_xticklabels([stocks.index[int(i)].date() for i in ticks[:-1]]) # Label␣
↪x-axis with dates
plt.title(symbol + ' Downside Risk')
plt.xlabel('Date')
plt.ylabel('Downside Risk')
```

[6]: Text(0, 0.5, 'Downside Risk')
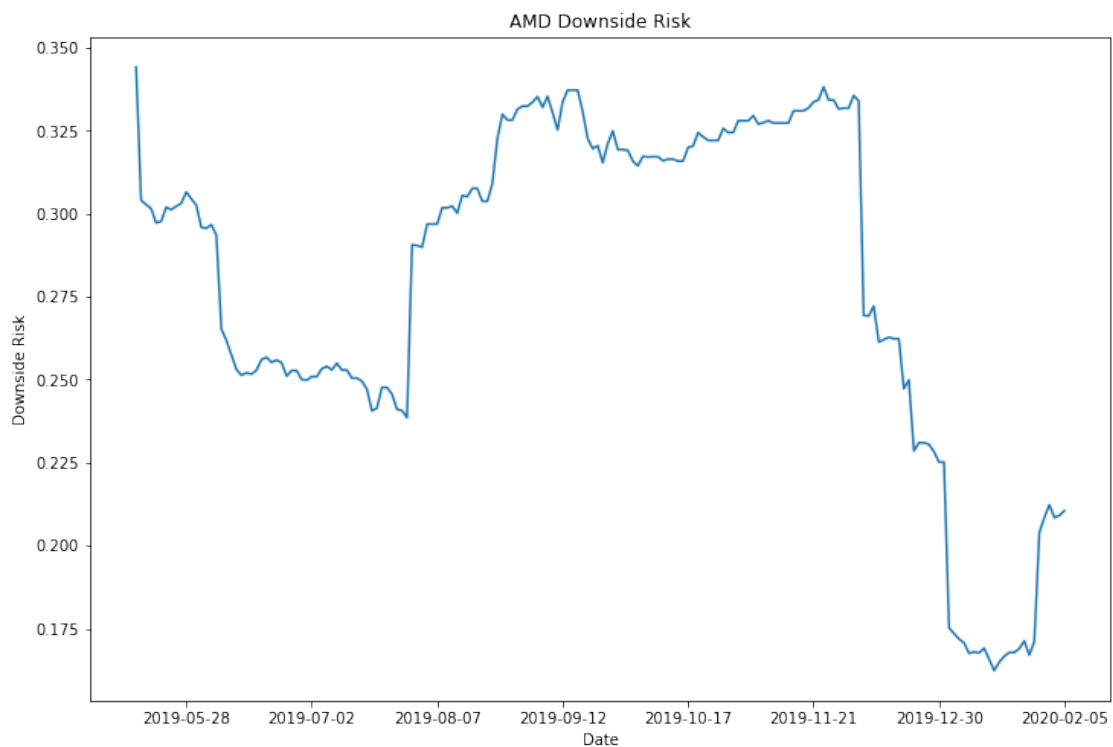
[7]:
```python
stock_dr = downside_risk(stocks_returns)
stock_dr
```

[7]: 0.38395655251521654

[8]:
```python
running = [downside_risk(stocks_returns[i-90:i]) for i in range(90,␣
↪len(stocks_returns))]
running
```

[8]: [0.34416996991007287,
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