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Introduction to Jupyter Notebooks

Introduction

Main purpose in this notebook:

- Introduce the Python workflow used in class.
- Download and transform finance data with `yfinance` and `pandas`.
- Visualize co-movement and volatility differences with simple plots.

Libraries

```python
import numpy as np
import pandas as pd
import matplotlib.pyplot as plt
import yfinance as yf
import seaborn as sns

import warnings
warnings.simplefilter(action='ignore', category=FutureWarning)
```

Data and Returns

```python
df = (yf
      .download(['MSFT', 'SPY'], progress=False, start='2000-01-01')
      .loc[:, 'Close']
      .resample('ME')
```

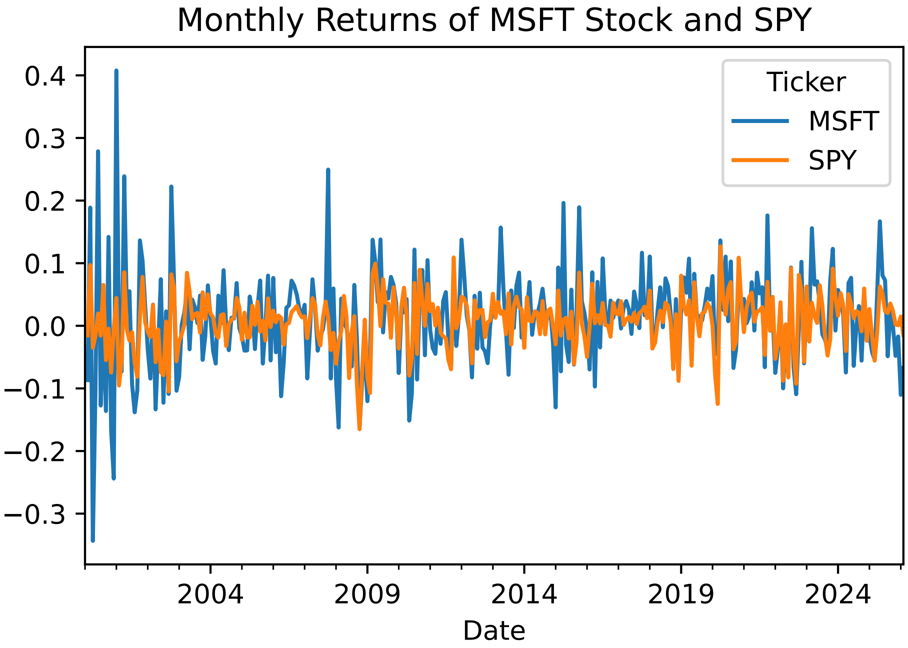
```
        .last()
        .pct_change())
```

Sample period used in the code:

- Monthly returns from January 2000 onward (subject to data availability).

Return Comparison

```
df.plot(title='Monthly Returns of MSFT Stock and SPY')
```

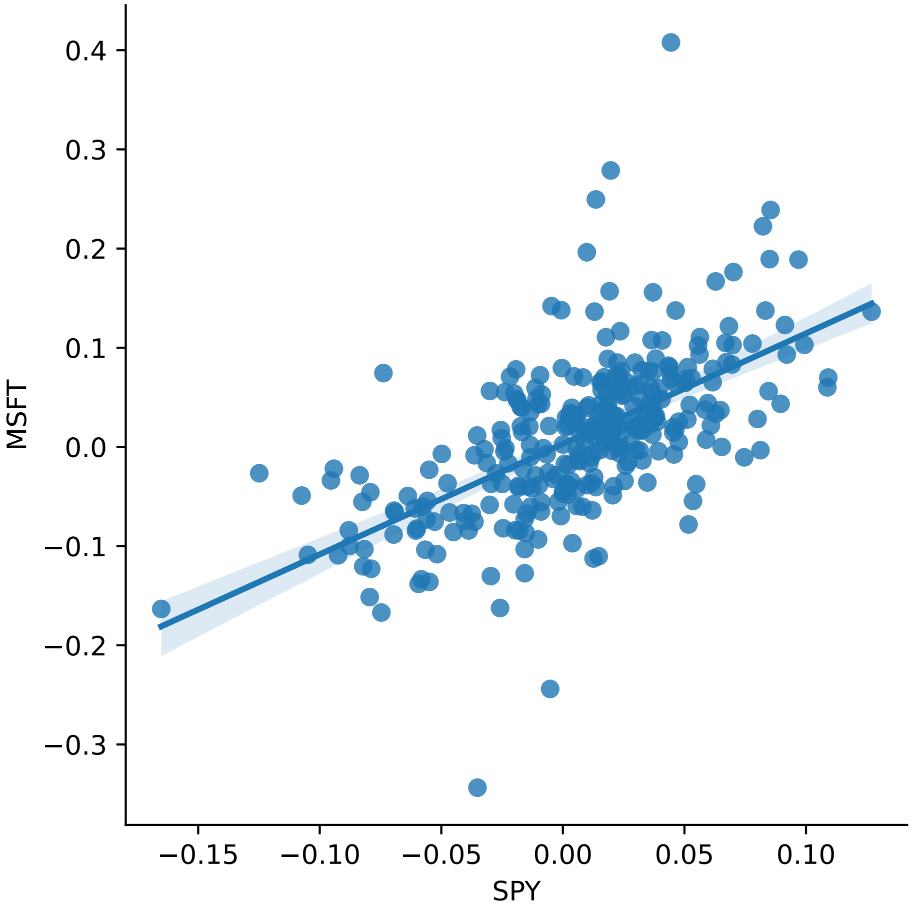


Key result:

- `SPY` returns are less volatile than `MSFT` returns, consistent with index diversification.

Co-Movement View

```
sns.lmplot(data=df, x='SPY', y='MSFT')
```



Interpretation:

- `MSFT` and `SPY` show clear positive co-movement.
- This visual relationship motivates factor-style regressions used later in the course.

Takeaways

- `yfinance` + `pandas` + plotting tools are enough for a complete first empirical workflow.

- The key steps are: download data, resample, compute returns, and interpret basic diagnostics.
- This notebook is a setup notebook; it introduces tools rather than advanced model testing.