

# Assignment\_5

March 7, 2022

```
[2]: import pandas as pd

wti_oil = 'WTI_OIL.xls'
gdp = 'GDP.xls'

wti_df = pd.read_excel(wti_oil, sheet_name='FRED Graph', header=10)
wti_df.rename(columns={"observation_date": "Date", "DCOILWTICO": "WTI_OIL"},
              inplace=True)

gdp_df = pd.read_excel(gdp, sheet_name='FRED Graph', header=10)
gdp_df.rename(columns={"observation_date": "Date"}, inplace=True)

print(f'{wti_oil} has {len(wti_df)} rows and starts at {wti_df["Date"].loc[0]}
      and ends at {wti_df["Date"].iloc[-1]}')
print(f'{gdp} has {len(gdp_df)} rows and starts at {gdp_df["Date"].loc[0]} and
      ends at {gdp_df["Date"].iloc[-1]}')
```

WTI\_OIL.xls has 145 rows and starts at 1986-01-01 00:00:00 and ends at  
2022-01-01 00:00:00  
GDP.xls has 300 rows and starts at 1947-01-01 00:00:00 and ends at 2021-10-01  
00:00:00

```
[3]: wti_df2 = wti_df.copy()
gdp_df2 = gdp_df.copy()
wti_df2.drop(range(144,145), inplace=True)
gdp_df2.drop(range(0, 156), inplace=True)
wti_df2.set_index('Date',inplace=True)
gdp_df2.set_index('Date',inplace=True)

wti_df2['GDP'] = gdp_df2.GDP

print(wti_df2)
#print(gdp_df2)
```

|            | WTI_OIL   | GDP      |
|------------|-----------|----------|
| Date       |           |          |
| 1986-01-01 | 17.217213 | 4507.894 |
| 1986-04-01 | 13.866094 | 4545.340 |

|            |           |           |
|------------|-----------|-----------|
| 1986-07-01 | 13.813906 | 4607.669  |
| 1986-10-01 | 15.406452 | 4657.627  |
| 1987-01-01 | 18.250328 | 4722.156  |
| ...        | ...       | ...       |
| 2020-10-01 | 42.524921 | 21477.597 |
| 2021-01-01 | 58.093443 | 22038.226 |
| 2021-04-01 | 66.186667 | 22740.959 |
| 2021-07-01 | 70.575469 | 23202.344 |
| 2021-10-01 | 77.327302 | 24008.472 |

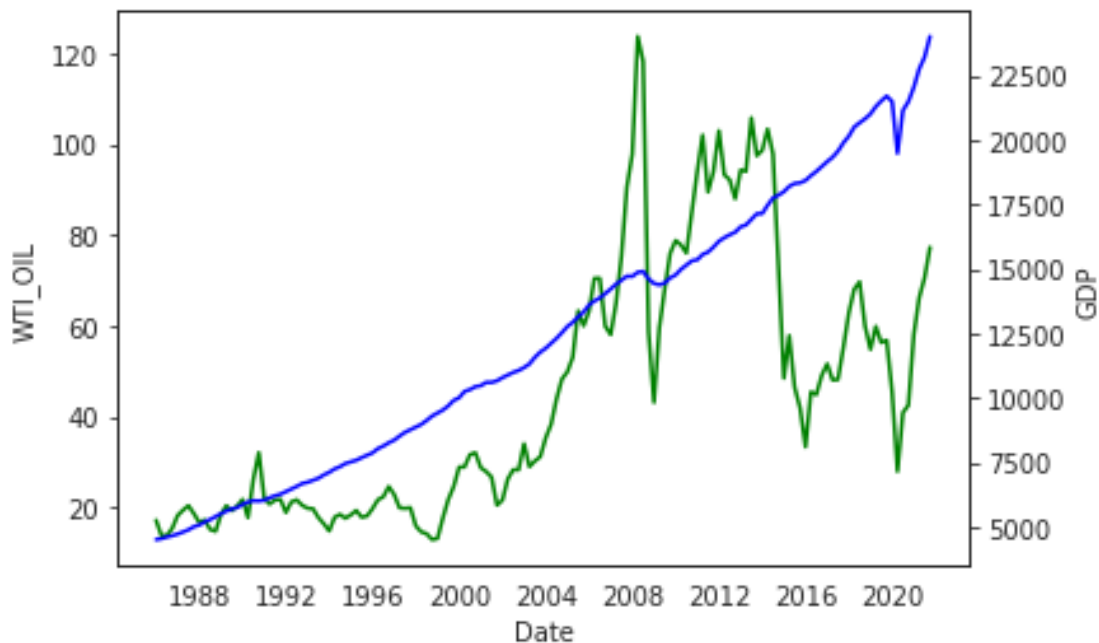
[144 rows x 2 columns]

```
[20]: import seaborn as sns
import matplotlib.pyplot as plt

sns.set_style("white")

sns.lineplot(data=wti_df2.WTI_OIL, palette="bright", color="g")
ax2 = plt.twinx()
sns.lineplot(data=wti_df2.GDP, color="b", ax=ax2)
```

[20]: <AxesSubplot:xlabel='Date', ylabel='GDP'>



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[11]: wti_df3 = wti_df.copy()
gdp_df3 = gdp_df.copy()
#wti_df3.drop(range(144,145), inplace=True)
```

```

#gdp_df3.drop(range(0, 156), inplace=True)
wti_df3.set_index('Date',inplace=True)
gdp_df3.set_index('Date',inplace=True)
wti_df3['GDP'] = gdp_df3.GDP
wti_df3.dropna(inplace=True)

wti_index = []
gdp_index = []

for index, row in wti_df3.iterrows():

    base_wti = wti_df3.iloc[0,0]
    base_GDP = wti_df3.iloc[0,1]

    wti_index.append(row['WTI_OIL'] / base_wti * 100)
    gdp_index.append(row['GDP'] / base_GDP * 100)

wti_df3['WTI_Index'] = wti_index
wti_df3['GDP_Index'] = gdp_index

wti_df3.drop(columns=["WTI_OIL", "GDP"], inplace=True)

wti_df3

```

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[11]:
      WTI_Index  GDP_Index
Date
1986-01-01  100.000000  100.000000
1986-04-01   80.536226  100.830676
1986-07-01   80.233114  102.213340
1986-10-01   89.482842  103.321573
1987-01-01  106.000476  104.753040
...
2020-10-01  246.990732  476.444144
2021-01-01  337.414901  488.880750
2021-04-01  384.421487  504.469692
2021-07-01  409.912268  514.704738
2021-10-01  449.127864  532.587323

[144 rows x 2 columns]

```

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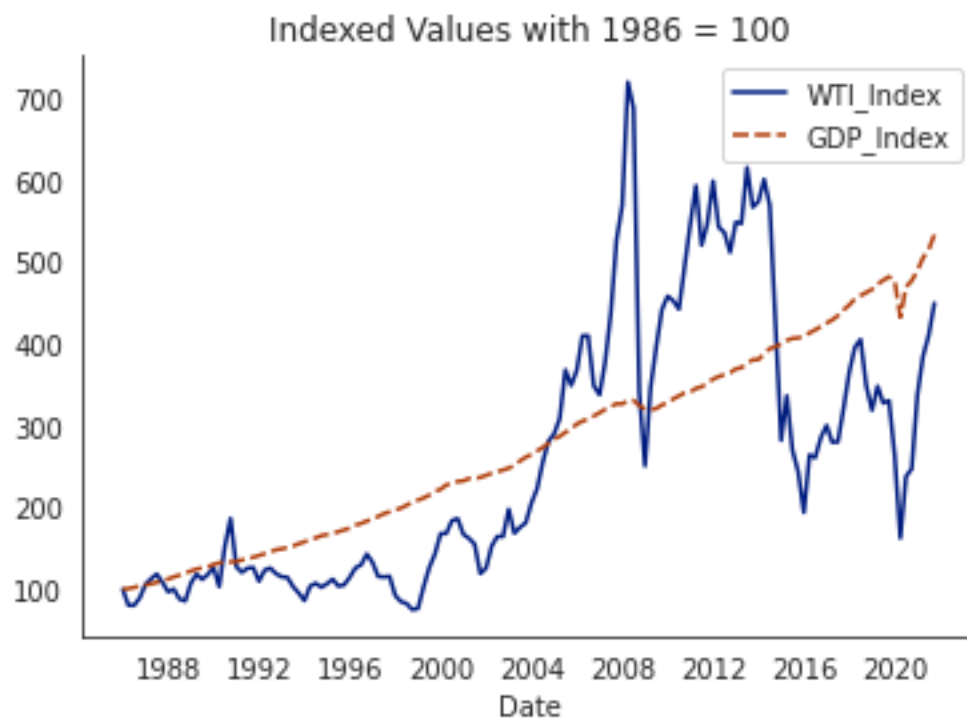
[26]: import seaborn as sns
import matplotlib.pyplot as plt

sns.set_style("white")

sns.lineplot(data=wti_df3, palette='dark').set(title="Indexed Values with 1986_
↵= 100")

```

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sns.despine()
```



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