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# Leveraging Data Science: Analyzing Foreign Direct Investment with NumPy and Pandas

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# Introduction to FDI Analysis



In today's global economy, **Foreign Direct Investment (FDI)** plays a crucial role. This presentation will explore how to leverage **Data Science** techniques, particularly using **NumPy** and **Pandas**, to analyze FDI data effectively and derive meaningful insights.



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Importing the required libraries

```
[ ] import numpy as np
import pandas as pd
import seaborn as sn
import matplotlib.pyplot as mp
import warnings
warnings.filterwarnings('ignore')
```

Reading the data

```
[ ] investdata = pd.read_csv(r'C:\Users\DELL\Desktop\Internship\FDI data.csv')
Idata=investdata.copy()
```

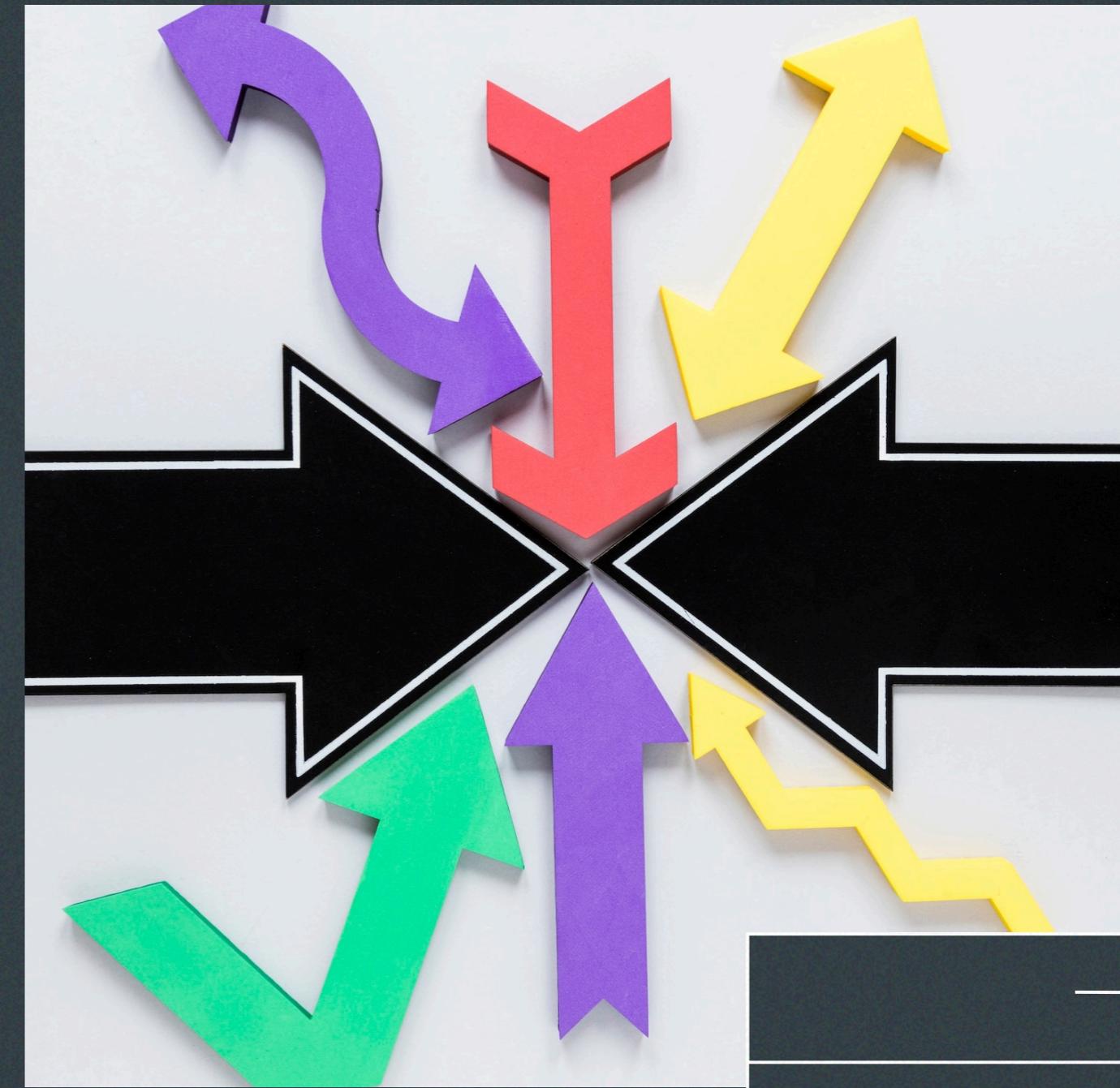
Checking the data by viewing top rows

```
[ ] Idata.head(10)
```

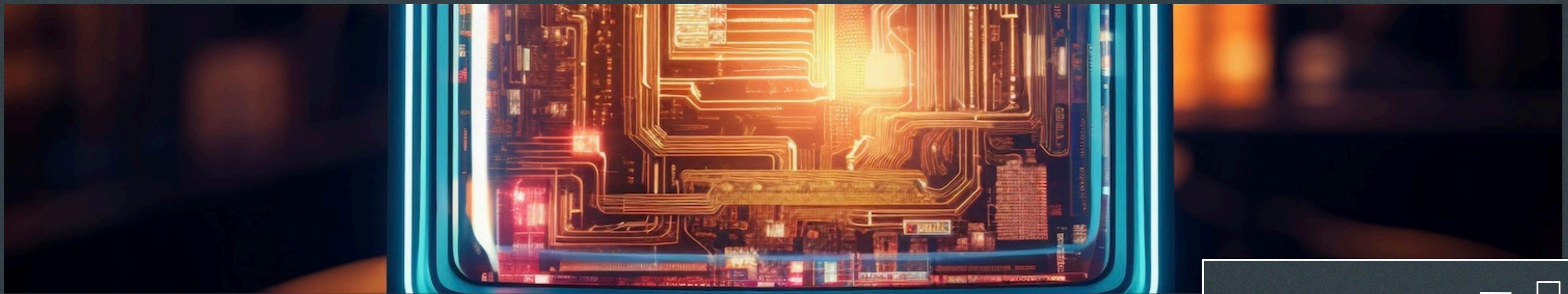
	Sector	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17
0	METALLURGICAL INDUSTRIES	22.69	14.14	36.61	8.11	200.38	149.13	169.94	1175.75	959.94	419.88	1098.14	1786.14	1466.23	567.63	359.34	456.31	1440.18
1	MINING	1.32	6.52	10.06	23.48	9.92	7.40	6.62	444.36	34.16	174.40	79.51	142.65	57.89	12.73	684.39	520.67	55.75
2	POWER	89.42	757.44	59.11	27.09	43.37	72.69	157.15	988.68	907.66	1271.79	1271.77	1652.38	535.68	1066.08	707.04	868.80	1112.98
3	NON-CONVENTIONAL ENERGY	0.00	0.00	1.70	4.14	1.27	1.35	2.44	58.82	125.88	622.52	214.40	452.17	1106.52	414.25	615.95	776.51	783.57
4	COAL PRODUCTION	0.00	0.00	0.00	0.04	0.00	9.14	1.30	14.08	0.22	0.00	0.00	0.00	0.00	2.96	0.00	0.00	0.00
5	PETROLEUM & NATURAL GAS	9.35	211.07	56.78	80.64	102.78	12.09	87.71	1405.04	349.29	265.53	556.43	2029.98	214.80	112.23	1079.02	103.02	180.40
6	BOILERS AND STEAM GENERATING PLANTS	0.00	0.00	0.00	0.04	0.54	0.00	3.31	1.51	0.00	3.96	0.63	31.79	20.05	0.17	1.33	77.91	53.91
7	PRIME MOVER (OTHER THAN ELECTRICAL GENERATORS)	0.00	0.00	0.00	0.00	2.66	0.74	25.57	40.53	74.88	39.50	166.44	313.75	184.60	212.78	230.70	159.13	286.88

# Understanding Foreign Direct Investment

**Foreign Direct Investment** involves investing in a business in another country. It is essential to understand the **trends**, **drivers**, and **impact** of FDI on local economies, which can be analyzed using data science techniques.



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## Data Collection and Preparation

The first step in FDI analysis is **data collection**. We gather data from various sources and utilize **Pandas** for **data cleaning** and **preparation**, ensuring that the dataset is ready for analysis. This step is crucial for accurate results.

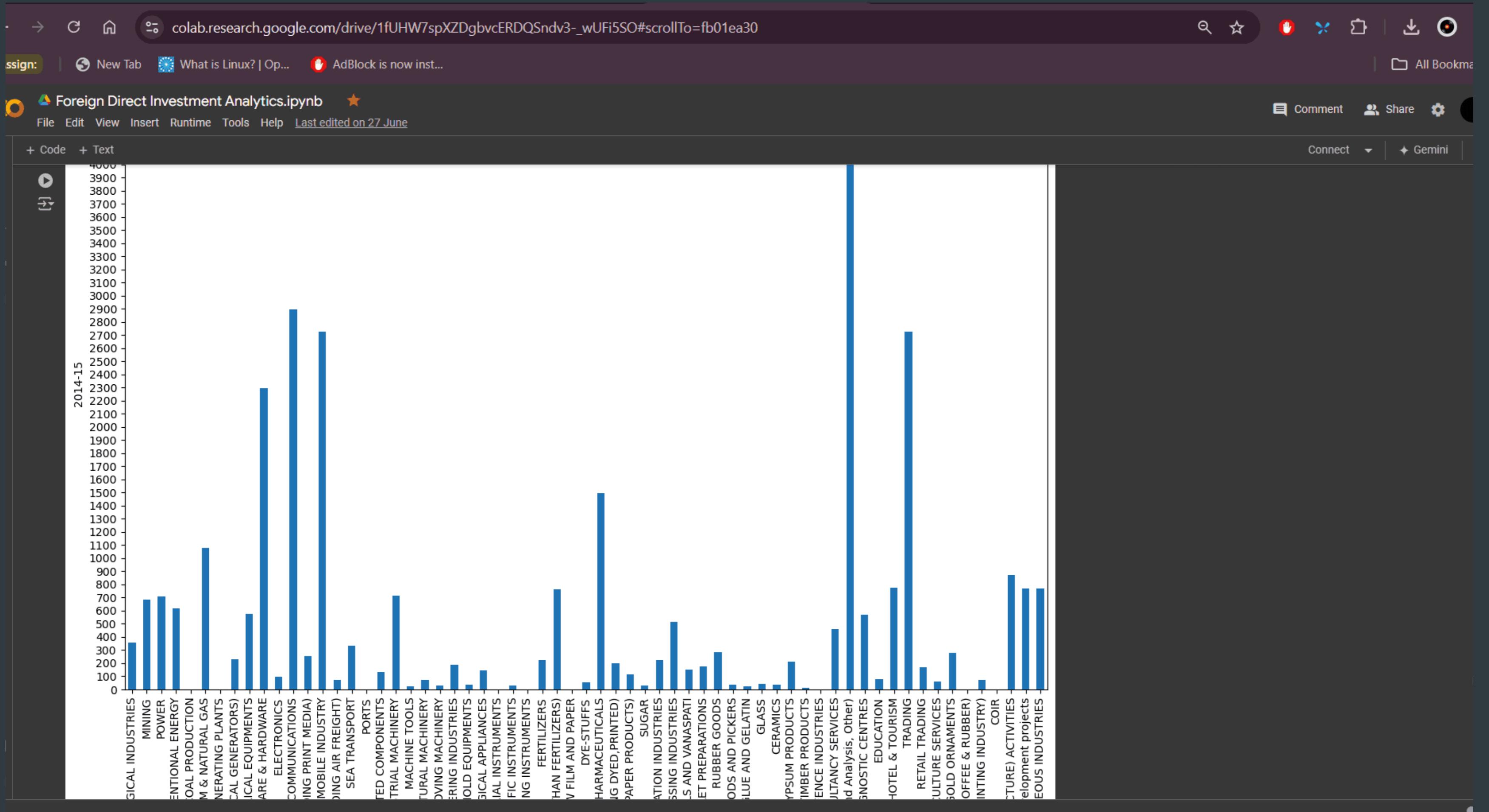




# Exploratory Data Analysis

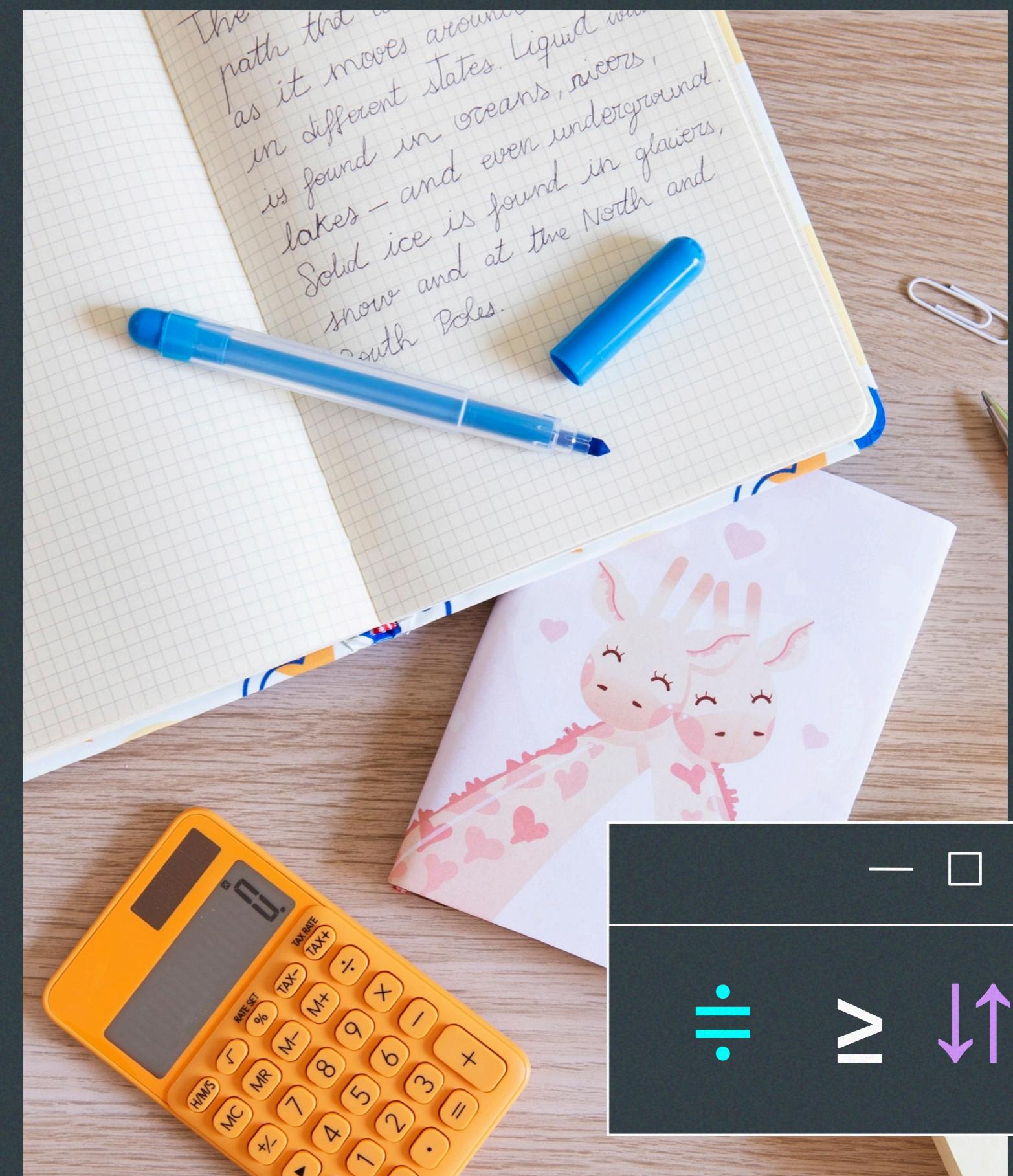
Using **NumPy** and **Pandas**, we perform **Exploratory Data Analysis (EDA)** to uncover patterns and trends within the FDI data. This step includes visualizations and statistical summaries that help in understanding the underlying data.





# Statistical Analysis Techniques

We apply various **statistical analysis techniques** using **NumPy** and **Pandas** to evaluate correlations and causations in FDI data. Understanding these relationships can help in making informed investment decisions.



## Foreign Direct Investment Analytics.ipynb ★

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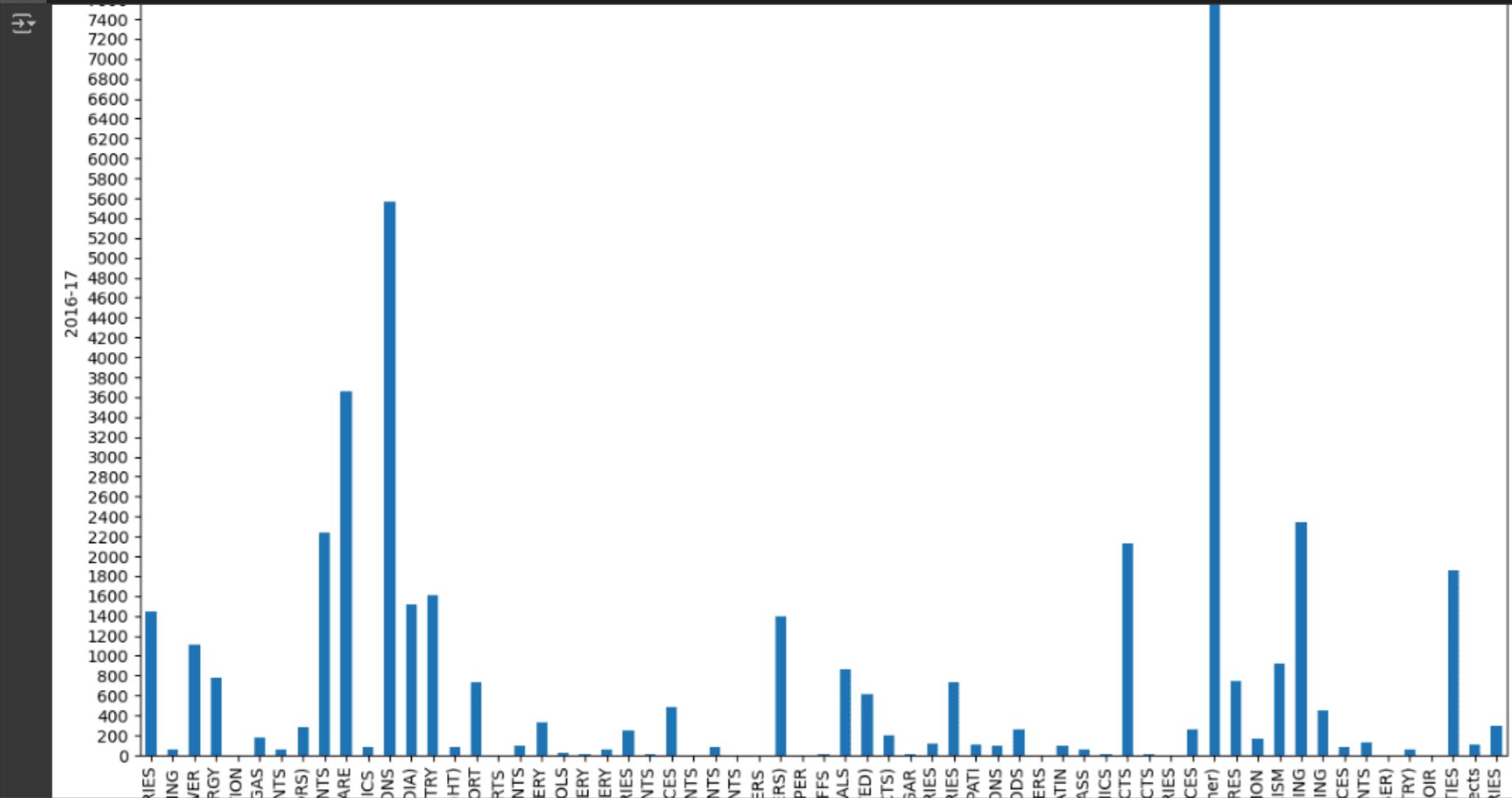
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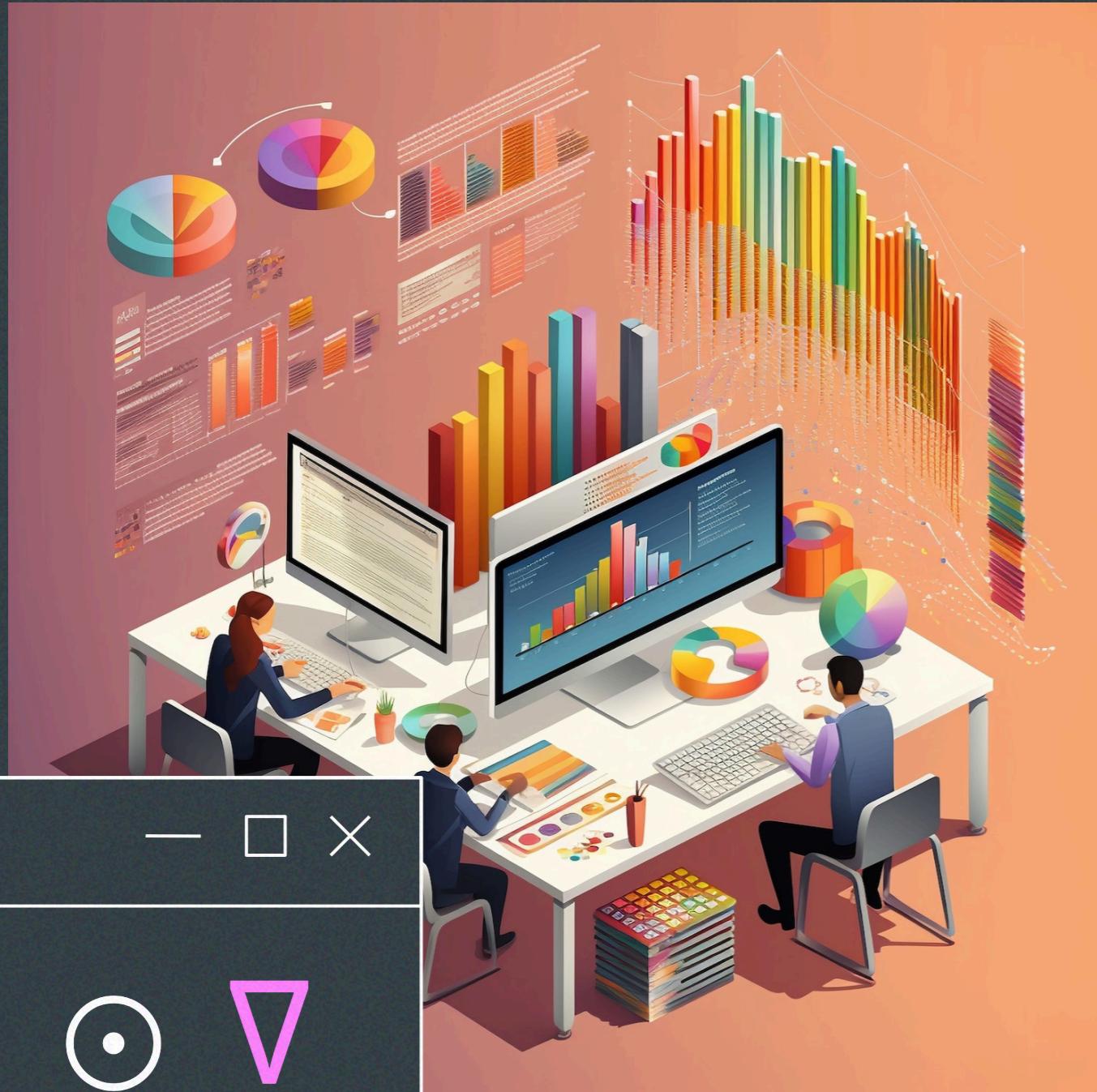
```
[ ] Fy17=list(Idata['2016-17'])
Fy17.sort()
print(Fy17)
```

```
[ ] [0.0, 0.0, 0.0, 0.0, 0.0, 0.8, 0.89, 1.6, 2.3, 7.44, 10.23, 10.7, 15.19, 15.4, 15.92, 23.89, 51.69, 52.23, 53.17, 53.91, 55.75, 76.43, 76.66, 83.4, 83.97, 87.57, 90.6, 92.6, 105.14, 108.45, 110.86, 123.92, 160.12, 180.4, 197.61, 245.24, 261.14, 262.76, 286.88, 296.4, 329.3, 400.0]
```

```
[ ] Idata.plot.bar(x='Sector',y='2016-17',legend=None,figsize=(15,10),rot=0)
mp.ylabel('2016-17')
mp.xticks(rotation=90)
mp.locator_params(nbins=90)
```



# Data Visualization



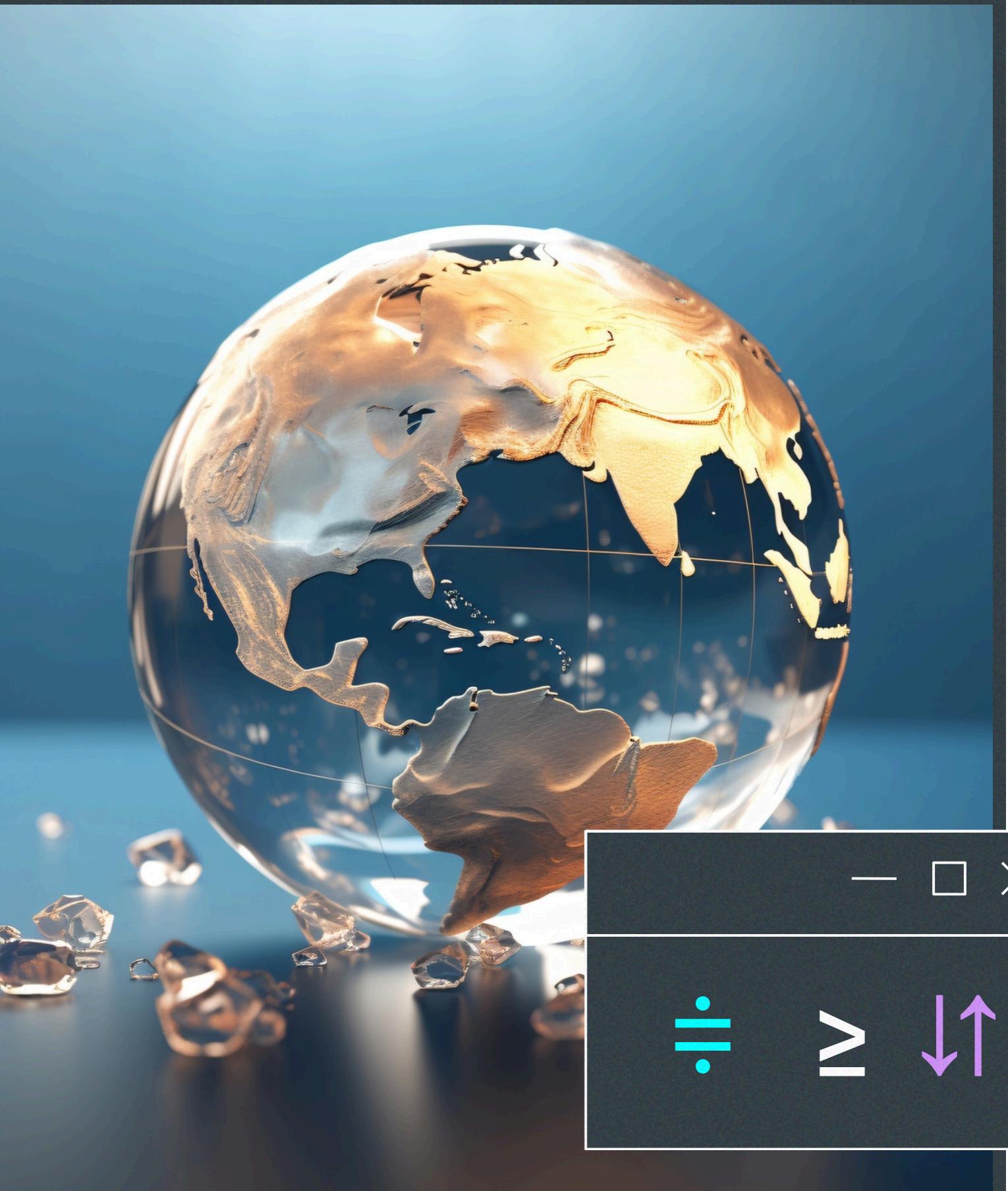
Effective **data visualization** is key to presenting analysis results. We utilize libraries like **Matplotlib** and **Seaborn** alongside **Pandas** to create informative charts and graphs that highlight significant findings in FDI trends.

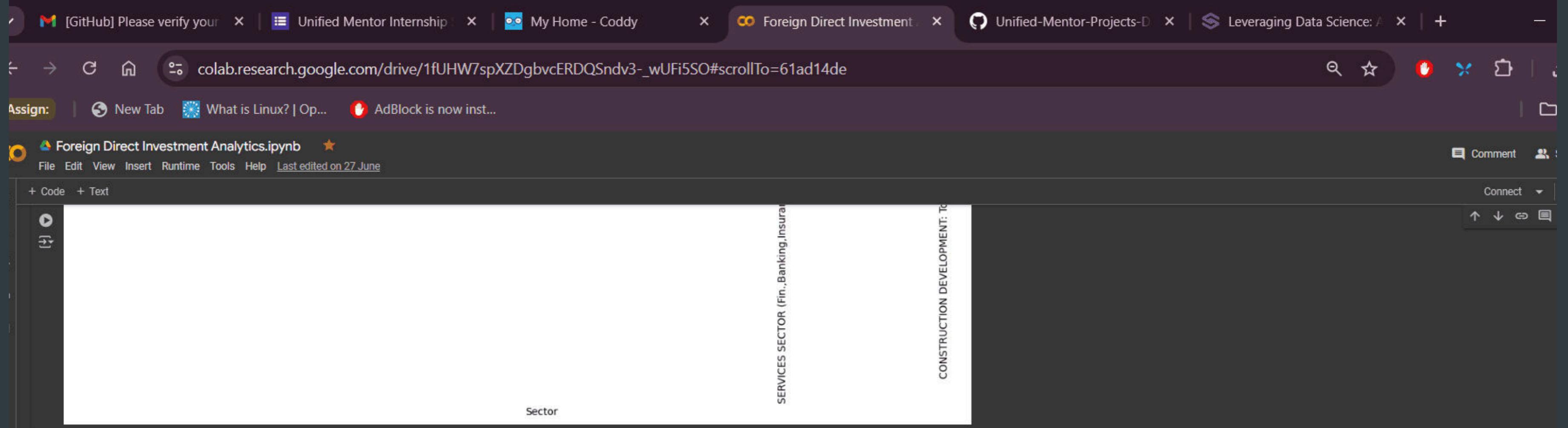


## Case Study: FDI Trends



In this case study, we analyze specific **FDI trends** in selected countries. By applying our data science techniques, we can identify which sectors attract the most investment and the factors influencing these decisions.





From the above bar plot we can conclude that in the financial year 2016-17 investment is high by Services Sector(Eg.banking&insurance.etc) and low by Industrial Instruments and some sectors have zero investment.

From the above all sector-wise vs financial year bar graphs and the Tableau visualizations we can conclude that Services Sector(Eg.Banking&Finance etc.) is the high investment sector in maximum number of financial years followed by Computers Software & Hardware sector and Coir is the low investment sector in maximum number of financial years and in every financial year some sectors have zero investment.

# Conclusion and Insights

In conclusion, leveraging **data science** tools like **NumPy** and **Pandas** provides valuable insights into **Foreign Direct Investment**. By analyzing and visualizing data, we can better understand investment dynamics and make data-driven decisions.