E383 - Exercises -
WiSe 2023/2024
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Problem Set 1

1 Macroeconomic Data

1. Download quarterly data on GDP, Inflation, Unemployment and the Federal Funds Rate from FRED using *Pandas Datareader* library. From this data, calculate the change in GDP and Federal Funds Rate.

2. Use the *Matplotlib* library to create one plot, with 4 subplots in a 2x2 layout, containing the variables downloaded in the previous task. Here a simple code example on how you may do that.

```
import matplotlib.pyplot as plt

# Create a 2x2 grid of subplots
fig, axs = plt.subplots(2, 2)

# Plot data on each subplot
axs[0, 0].plot(x, y)
axs[0, 1].plot(x, y)
axs[1, 0].plot(x, y)
axs[1, 1].plot(x, y)

# Show the plot
plt.show()
```

3. Download data from the Fed Distributional Financial Accounts. In particular, take the data over time, in levels, on wealth and distributed over wealth percentiles. Do the appropriate data cleaning to obtain a time series for the Top 1%, Top 10%, Middle 40% and Bottom 50% Shares of the Wealth distribution.

4. Do the same for corporate equities shares and real estate shares.

5. Use *Matplotlib* library and create three different plots for wealth, equities and real estate, each containing the share for each of the selected distribution percentiles.

2 "Effects" of monetary policy on inequality

1. Run a regression of changes on the Top 1% Wealth Share on changes in the Federal Funds Rate. For that, do the appropiate calculations to obtain the change in the Wealth Share. Do the same for the Bottom 50%

2. Generate two scatter plots where you plot the change in the specific Wealth share on the Y axis and the change in Federal Funds Rate in the X Axis. Additionally, plot the fitted regression line.

3. Does Monetary Policy increase or decrease wealth inequality?

4. What is the problem with this approach?

5. At this stage, how would you try to solve this problem?

6. Think about two possible instruments that you would use in order to improve the regression carried in exercise 1. Provide a clarification why you think the provided variables might be good instruments.

7. With the instruments of selected in the previous task, run a 2SLS regression for each of the Wealth Shares specified in exercise 3 of Section 1. For that, you might need to get additional data. Make sure that all the data you use has the same sample period and frequency. Additionally, specify from which data source you obtained it.

8. Did the results change significantly compared to exercise 2. Explain why yes/not?

9. Why even after carrying 2SLS this might not be the causal effect of Monetary Policy on wealth inequality? Provide a couple of reasons.