

ECON 343, Spring 2021 HW4

Please upload two to four files to the appropriate D2L folder by the deadline: One must be a *written report* in .pdf (preferred) or Word format, which answers all questions using text, graphics, and results tables. The second will include your final **13-variable database**. This may be in Excel or in any readable format. You should also include your original downloads (one each from FRED and the Bank of Mexico)—all in one Excel tab. (This can be in the same file as your database.)

The main part of this assignment is to produce a quality report that integrates correctly-made figures and text. It will ask you to create a database (beginning in 1977) of nominal and real interest rates for the United States and Mexico. You will need data starting in January 1976 to get a final database that starts in 1977.

This assignment is worth 10 percent of your final grade. Please do not work with anyone else to complete it (or you get a zero!).

1. Use the **U.S. CPI** that you downloaded from HW #3 (It is also available through the Key). Go to the FRED database at fred.stlouisfed.org. Download the **U.S. Fed Funds** interest rate: The code is *FEDFUNDS*. In your report, briefly **describe** this variable, recalling what you learned in previous macroeconomics courses. For Mexico's interest rate, use **Immediate Rates: Less than 24 Hours: Call Money/Interbank Rate for Mexico** (*IRSTCI01MXM156N*).
2. Go to Mexico's central bank website at www.banxico.org.mx. In your report, make sure you answer: **What is the main objective of the Bank of Mexico?**

Now get Mexico's CPI (In Spanish, the acronym would be *INPC*).

Find the Economic Information System (under "Statistics") and follow:

Main Price Indexes (monthly) → Consumer Price Index and UDIS → Main Price Indexes (monthly) - (CP154) → Consumer price index (INPC)

Make sure you "Export Series" and that the start date is early enough (1976).

Start with a database that begins 1/1/1976 and ends 12/1/2020 with the following variables: *PUS RUS PMX RMX*; then add nine more variables.

3. Calculate the **inflation rates** (1-month and 12-month) for both countries. You can call these new variables *INFUS12*, *INFUS*, *INFMX12*, and *INFMX*. Make sure to multiply the 1-month rate by 1200, not 100. Also calculate *INFDIFF*, which is Mexico's minus the U.S. 12-month inflation rates. **Answer: How many observations do you lose?**

4. **Plot four graphs**, side-by-side or 2x2, with the following pairs of interest or inflation rates:
 - a) Both nominal interest rates; b) Both 12-month inflation rates; c) both 1-month inflation rates; d) both Mexican inflation rates**Describe any differences or similarities. When is each rate highest?**
5. Calculate both countries' **real interest rates** ($r - \pi$), using the 12-month inflation rates. These can be called *REALRUS* and *REALRMX*. Plot these rates together on a time-series graph and **answer**: What patterns do you see, both over time and between countries? What does this have to do with inflation (and Question 4)?
6. Also calculate the nominal and real interest-rate **differentials**, Mexico minus U.S., from 1977 to 2020 (*NOMRDIFF* and *REALRDIFF*). Plot these two time series, and answer: What patterns do you see, both over time and between countries? What does this have to do with inflation (and Question 4)?
7. Calculate **correlations** between *INFDIFF* and *REALRDIFF* and make a scatterplot. Are the variables related? Explain, using economic knowledge.
8. Make a table of **summary statistics** for all nine of the new variables that you calculated and answer: Which inflation rate, U.S. or Mexico's, has the highest average and the largest standard deviation? Of all the differentials you calculated, which are negative on average?

BONUS: Compare the means and standard deviations before and after January 2000. What can you say about the average inflation rate and inflation volatility?