ECON 343, Spring 2021 HW5

Please upload three 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 one of your original downloads from the Bank of Mexico—in its original downloaded form (upload exactly what you downloaded).

The main part of this assignment is to produce a quality report that integrates correctly-made figures and text.

This assignment is worth 10 percent of your final grade. Please do not work with anyone else to complete it.

This assignment looks at the Mexican peso and its real exchange rate.
You already have the U.S. and Mexican CPI series. Here, you just need the (nominal) bilateral exchange rate (versus the dollar) and the real effective exchange rate. You will download a few versions of the series, but choose one.

1. Go to the Bank of Mexico Economic Information System again. Find the series "Exchange rate, monthly average" and download the series (CF86) beginning in 1979 or earlier. If you have more data, you can always download it and not use it. But you will need 1979 data to make 1980 appreciation series, and will calculate rolling standard deviations starting in 1981. **Answer**: How many series are available? Why is series SF329 the best option for using in this Homework? You can use this series and label it as *MXNUSD*.

2. Now download the series "Real exchange rate with respect to 111 countries" (CR60). **Answer**: How many series are available on the download page? What is the timespan of these data? Read the description from the download page. Which variables are similar to ones you already have? What is the code for the real effective exchange rate? Call this variable *MXREER* but keep the rest for one question in this assignment.

3. Make a starting database with the following variables (from 1979m1 to 2020m12):
   USCPI, *MXCPI*, *MXNUSD, MXREER, SR464, SR465, SR1501, SR1503*
   Remember to leave blanks if you have some "short" series and to line them up properly.
   Compare *SR1501* and *MXNUSD*. **Answer**: Are they similar? Are they related? Do the same for *SR1503* and *MXCPI*. Hint: Try dividing one series by the other, in addition to using other tools you have learned.)

4. Calculate the peso-dollar real exchange rate using the formula:
   $RER = \frac{P^{US} \times E_{MXN/USD}}{P^{MX}}$. This is USCPI * MXNUSD/MXCPI.
   Next, take appreciation rates—12-month log changes—for *MXNUSD*, *RER* and *MXREER*. Add *RER*, *DLNMXNUSD*, *DLNRER*, and *DLNMXREER* to your database.
   Plot nominal E, real E, and real effective E side-by-side (as separate graphs). Then plot log changes in the three series separately right below them. **Answer:** What patterns do you see? Are any series flat or unchanging at any time? Are there big increases or decreases in any of the exchange rates, and if so, when?

5. Plot *RER* and *REER* together on one time-series graph. Then make a scatterplot of the two series. **Answer:** Are they related? Do you recognize any patterns?

6. Finally, calculate the 12-month moving standard deviation for *DLNRER*. You can call this variable *RERSD* and add it to your database. This is a volatility series.
   It should begin in January 1981, since you will need a full year's worth of data to calculate it. Plot this series and provide a table of summary statistics. **Answer:** When is volatility highest? When is it lowest? Overall, what can you say about this series over time, and its relation to events in Mexico and the United States?