

**This homework is due on Thursday November 13 at the end of class**

**When you are asked to make a graph please carefully label all variables, axis, and the slope of each line you draw.**

**The homework consists of 4 questions**

**Question 1: (40 points)**

Go to the Fred database: <http://research.stlouisfed.org/fred2/categories>

Think of this exercise as a report you have to write for your company, be as precise as you can. Use as many observation as they are available. Make sure that the frequency of the data you are using matches. (to make sure: define what the frequency of a time series is)

Start comparing US and Germany. Find data for the nominal exchange rate between US dollar and German Marks/Euro (use the appropriate currency for each period).

Find data for US and Germany interest rates on treasury securities. For each country consider two measures of interest rates:

- a) Interest Rates, Government Securities, Treasury Bills (for instance, look at <http://research.stlouisfed.org/fred2/series/INTGSTDEM193N>)
- b) Interest Rates, Government Securities, Government Bonds (for instance, look at <http://research.stlouisfed.org/fred2/categories/32273>)

Please define the difference between bills and bonds. Please define expected return, and realized return. Please define what is the risk premium.

- i) Calculate the percentage change in the nominal exchange rates. Calculate the realized return for a US investors of investing in German Government Bills and Bonds (write down the formulas you are using)
- ii) Plot the following time series: a) interest rates differential (for both Bills and Bonds), b) change in the nominal exchange rates, c) realized returns for a US investor investing in German bonds and bills.
- iii) If the risk premium is constant over time what should be the relation between interest rate differential between US and Germany and the change in the nominal exchange rates? Please explain using equations if you can. Are the plots in part ii) consistent with this behavior?

Redo parts i-iii using data for US and UK.

Redo parts i-iii using data for US and Italy (as for Germany mind the switch from Liras to Euro).

**Bonus question** (we will talk about this at the end of the course, but give it a try): Do you notice a difference in the behavior of German and Italian interest rates during the euro period? What can explain the differential behavior? What are we implicitly assuming in our analysis?

**Question 2: (20 points)**

Please do Exercise 1 at the end of Chapter 8 in the lecture notes.

**Question 3: (20 points)**

Please do Exercise 1 at the end of Chapter 9 in the lecture notes. Note that you can download the ICP report for 2005 at

[http://siteresources.worldbank.org/ICPINT/Resources/270056-1255977254560/6483625-1337016259587/2005ICPReport\\_FinalwithNewAppG.pdf](http://siteresources.worldbank.org/ICPINT/Resources/270056-1255977254560/6483625-1337016259587/2005ICPReport_FinalwithNewAppG.pdf)

**You are not required to do part c of the exercise:** Just present a scatter plot of the data (part d) and comments your results. In particular, are the data for PLI and BMAC for the different countries close to be on the 45 degree line? Or do they lie on a line with positive slope and positive intercept? (Slope and intercept correspond to alpha and beta in the regression). If cannot run a regression just eye-ball the pattern in the data.

PS. If you don't know what a regression is, I strongly encourage you to take an introductory econometrics class before you graduate.

**Question 4: (20 points)**

Please do Exercise 2 at the end of Chapter 9 in the lecture notes.