

ISCTE — INSTITUTO UNIVERSITÁRIO DE LISBOA

MACROECONOMICS

Group Essay – 1st Part

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## Measurement and major facts about business cycles

Go to the Federal Reserve Bank of St. Louis, to its database called FRED, which can be found here

*<http://research.stlouisfed.org/fred2/>*

and **download the following time series** (do not forget that in order to find those series, the best way is to click on "Category" to browse for your data and then proceed towards the specific series you are looking for, see the next figure)



1. From "**National Accounts**", the following aggregates measured in real terms (quarterly data): GDP (Real Gross Domestic Product), Investment (Gross Private Domestic Investment), Consumption (Personal Consumption Expenditures), Government Consumption (Real Government Consumption Expenditures & Gross Investment).
2. Use the "Search Fred data..." window (see picture above) to find two other data files: (i) **Hours worked by full-time and part-time employees** (just type "Hours", and then scroll down and look for this entry; (ii) **Total Labor Productivity** (type "Labor productivity" and search for this aggregate).

3. From **Money, Banking, & Finance**, the following aggregates measured in nominal terms (quarterly data): M2, Monetary Base, the Federal Funds Rate.
4. And the last two should be (quarterly data): from **Prices** you should get the "Consumer Price Index"(choose unit as "percentage Change from Year Ago"), and from **Population, Employment, & Labor Markets**, obtain the "unemployment rate".

**Question I.** By adapting the routine *"hpFilter\_script\_Modern\_Macro.m"* (attached to this entry) to your data file, calculate the Hodrick-Prescott filter for each one of the variables above.

**Question II.** Using the Matlab function *corrcoef(X,Y)* for variables X,Y, and the function *std(X)*, calculate the correlation between GDP and each of one of those variables above mentioned. Do not forget to (i) conclude about which variables seem to be procyclical, countercyclical, or acyclical; and (ii) conclude about the volatility in this set of macroeconomic variables.

**Question III.** Using the routine *"phillips2.m"* (attached to this entry), and using the data you downloaded from FRED (about the inflation rate and the unemployment rate) what do you conclude about the existence of a Phillips Curve for the USA for the period considered?