

# EC 103–002

## Problem Set 2

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**Prof. Santetti**

Fall 2022

## INSTRUCTIONS:

Except for the *Hands-on* section, your answers must be **handwritten**, scanned (you may use a phone app such as CamScanner), and submitted in a single PDF file with your *first name* (mine would be marcio.pdf). You can convert images to PDF format [here](#). Also, you can merge different PDF files [here](#).

For the *Hands-on* section, you will submit a single R script (that is, a .R file) with your *first name* (mine would be marcio.R). In case your script and PDF files are submitted with different file names, you will lose 2 points.

Your R script should only contain the necessary R commands and brief comments about your results when appropriate. (Do not forget the # symbol! In case you play around with different functions and make other annotations about the questions, leave them in a script for your own use. For grading purposes, I am only interested in the code and comments that will answer the questions.

On theSpring, you can find a module called Templates, where you can download a template R script to write your code and comments. Please consider using it.

Submit your 2 files via theSpring. In case you experience any issues, email them to [msantetti@skidmore.edu](mailto:msantetti@skidmore.edu).

Assignment due 10/31, before class.

Points Possible: 50

- You have 2 weeks to complete this assignment. In accordance with our [course syllabus](#), no late submissions will be accepted.
- Be honest. Don't cheat.
- As a Skidmore student, always recall your votes of academic integrity, and the [Honor Code](#) you have abided by:

*"I hereby accept membership in the Skidmore College community and, with full realization of the responsibilities inherent in membership, do agree to adhere to honesty and integrity in all relationships, to be considerate of the rights of others, and to abide by the college regulations."*

Have fun!

## Reflection

This portion was performed in class as a group assignment. If you were part of a group and presented your views in class, you may *skip* this section.

In case you were not present, check out the [Economic growth: Discussions](#) slide deck, where you can find all news articles we talked about.

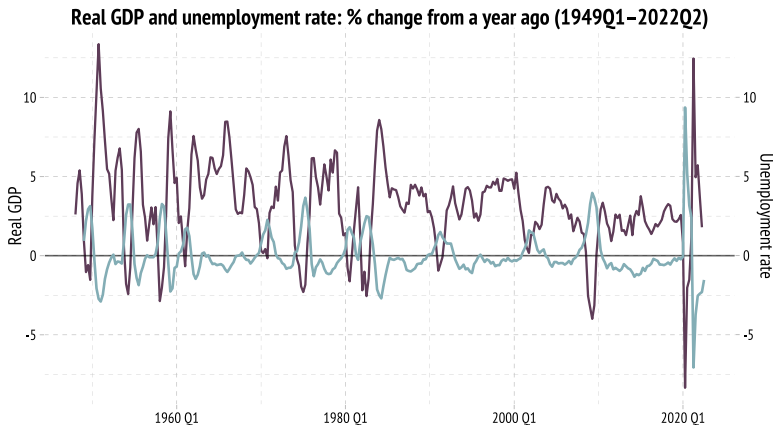
Choose one of the news pieces and write a 1-page reflection on the piece, relating the content with what we explored in class. (10 points)

## Concepts Review

**[True/False]:** For the following 10 parts, evaluate whether the sentences are true or false. If false, give a brief explanation of why the sentence is incorrect.

- (a) If *only* the prices of face masks and computer chips go up, we can consider it inflation. (1 point)
- (b) An individual is considered unemployed if, although not currently working, has been searching for jobs in the previous four weeks. (1 point)
- (c) Someone not actively looking for jobs is also accounted for in official unemployment data. (1 point)
- (d) The CPI's *Core Index* excludes the prices of housing and transportation that are included in the main CPI measure. (1 point)
- (e) Data are collected for the CPI through *two* survey components: the Interview Survey and the Diary Survey. (1 point)
- (f) Causes of inflation may be summarized into demand-pull and cost-push categories. (1 point)
- (g) Unpaid work (e.g., taking care of children at home) is not officially included in (un)employment data. (1 point)
- (h) The labor force includes all individuals that are not currently employed and the unemployed. (1 point)
- (i) Food and energy tend to be the most volatile components of the Consumer Price Index. (1 point)
- (j) Full-time students are considered as "out of the labor force." (1 point)

**[Analyzing US data]:** In the graph below, the historical series for the US unemployment rate (green) and real GDP (purple) are plotted together, as their % changes relative to the previous year in the sample period. Based on your readings and what was exposed in class, what do you observe in this chart, regarding how and economy grows and the state of its labor market? (10 points)



**[Podcast on inflation]** Listen carefully to [this recent episode](#) of The Daily podcast (NYT), and answer the following questions:

- (a) What is the main/mostly used policy tool used by the US Federal Reserve (FED) to control inflationary surges? (2 points)
- (b) What is the *mechanism* behind using the tool from part (a) to control rising prices? In other words, what are policy makers' expected results when applying this policy? (2 points)
- (c) In an inflationary scenario, is it simple/fast to reflect policy measures to actual consumers/businesses behavior? Explain. (2 points)
- (d) How does the FED policy tool influence the used-car market, as discussed in the podcast? Explain. (2 points)
- (e) Relate the current inflationary scenario with (i) the ongoing FED policy, (ii) consumers' willingness to spend their money, and (iii) the used- and new-car markets. (2 points)

## Hands-on

For this section, you will use the `ps2_data.csv` file, available at the course's GitHub page, or on `theSpring`. It contains US monthly data on two variables:

- `cpi` — the Consumer Price Index (all items, index 1982–1984 = 100): 01/2018–09/2022;
- `unrate` — the unemployment rate (% of the labor force): 01/2018–09/2022.

Import the data set into your RStudio session, and then answer the following questions:

- (a) Compute the *monthly growth rate* of the unemployment rate for this period, and call this new column `growth_unrate`. (2 points)
- (b) Compute the *monthly growth rate* of the CPI for this period (i.e., the inflation rate), and call this new column `inflation_rate`. (2 points)
- (c) Plot the monthly growth rate of unemployment over time. As you are presenting this graph to another reader, it needs to be as *informative* as possible. (2 points)
- (d) Plot the monthly inflation rate over time. As you are presenting this graph to another reader, it needs to be as *informative* as possible. (2 points)
- (e) Store your plots from parts (c) and (d) into R objects. Then, using the `patchwork` package, plot them in the same window, in your preferred layout. (2 points)