

MGTECON 300, Spring 2021
Stanford Graduate School of Business
Professor Chad Jones

Assignment #3

Due on Canvas on
Sunday May 16 at 11:59pm (pdf only)

You are welcome to work in groups (of up to 4 people) on the homework assignments in this course; all group members must be in the same professors sections (so that the groups can be formed in Canvas). Each group turns in *one PDF* file via Canvas. Please put all group members' names on the top of the first page of your submission.

- You will need to join a Canvas group **before** submitting your solution.
- **To allow you maximum flexibility in changing groups, you will need to sign up for groups again at the start of each assignment. (It is fine to have the same group or to change groups).**
- If you have any questions about groups, please email Rachel at schuhr@stanford.edu.

1. **How much is that?** Using the data on the Consumer Price Index reported in Table 8.1 on page 215 of the textbook, calculate the value in 2021 of the following items (use the nearest year in the table to do the calculation; for example, in part (a) just use the number from 1990). Assume the value of the CPI in 2021 is 105 for this purpose.
- (a) A pack of M&M candies cost 45 cents in 1991.
 - (b) A movie ticket to see *Star Wars* in 1977 cost about \$2.25.
 - (c) A quarter pounder from McDonald's in 1972 cost 55 cents.
 - (d) A bottle of Coke or Pepsi cost a nickel in the late 1940s.
 - (e) Babe Ruth's salary in 1932 was \$80,000.
 - (f) In the early 20th century, Henry Ford advocated paying workers \$5 per day, well above the prevailing wage at the time. To keep things simple, assume this salary applied in the year 1900 and assume the worker worked 250 days per year. To what annual salary today is this equivalent?

2. **Measuring \bar{Y}_t and \tilde{Y}_t .** This problem exposes you to a real-world policy problem faced by policymakers, forecasters, and businesses every day: how to judge the state of the economy. Consider the following table:

Year	Current Output Y_t	Potential Output \bar{Y}_t	$Y_t - \bar{Y}_t$	Short-Run Output \tilde{Y}_t
2024Q1	25.00			
2024Q2	25.20			
2024Q3	25.40			
2024Q4	25.30			
2025Q1	25.20			
2025Q2	25.15			
2025Q3	25.13			
2025Q4	25.30			
2026Q1	25.50			
2026Q2	26.00			
2026Q3	26.80			
2026Q4	27.10			

The table shows hypothetical measures of real GDP in the coming years, starting at a level of \$25.0 trillion in the first quarter of 2024. Your job is to fill in the remaining columns of the table by answering the following questions.

- (a) What is potential output in 2024Q1? Notice that this is a trick question: there is no way for you to know the answer! In some ways, that is the main point of this exercise. Fundamentally, we have to make some other measurements and make some assumptions. As a short cut, let's suppose our research reveals that business surveys, unemployment reports, and recent years' experience

indicates that the economy is operating at potential output in 2024Q1. So go ahead and write “25.00” trillion in for potential in that quarter.

- (b) Assume potential output grows at a constant annual rate of 2.5%, and complete the remainder of the table.
- (c) Comment on the state of the economy in each year. When does the economy enter a recession? When does the recession end?

3. **Analyzing Macroeconomic Events with the IS-MP Diagram.** Consider the following events in the macroeconomy. Show how to think about them using the IS-MP diagram. For each, explain how and why GDP in the United States is affected in the short run and show how the central bank should respond if it wishes to stabilize output.

- (a) The government offers a temporary investment tax credit: for each dollar of investment that firms undertake, they get a credit that reduces the taxes they pay on corporate income.
- (b) A housing bubble bursts, so that housing prices fall by 20% and new home sales drop sharply.
- (c) A resurgence of growth in Japan leads to an unexpected increase in the demand by Japanese consumers for U.S. goods.

4. **The Current State of the European Economy.** By now, you are relatively familiar with recent economic events in the United States. But what about Europe? Write several paragraphs about the state of the economy in the Euro area over the last several years. What has happened to inflation, real GDP growth, and unemployment? What about a key policy interest rate set by the European Central Bank (ECB)? (Hint: the ECB reports several key interest rates. To keep us all on the same page, let's look at the “ECB Deposit Facility” which is the rate that banks

earn on their deposits at the ECB; be sure to find a series that includes through this year.)¹ An extremely helpful resource for this exercise is the ECB's [Statistical Data Warehouse](#). (You may find it helpful to copy some of the ECB's graphs.)

¹You'll definitely learn a lesson in web page design from looking for the interest rate graph. Click on "ECB/Eurosystem Policy" then "Official Interest Rates" and page down...