

## Problem set 4

ECON-A2200 Principles of Economics II

**Deadline:** Wednesday December 1 at 23:59

**Instructions:** Return your answers in a **single pdf-file through MyCourses** (*lastname\_firstname\_PII\_PS4.pdf*). Make sure to include your name and your student number in your answers file. You may draw the graphs by hand or with any software (excel, power point, matlab, word,...). In whichever way you draw them, remember always to label the axes, and any point and line or curve that you draw. Add some description/explanation. If solutions are handwritten, make sure that your handwriting is easy enough to read, the picture is of good quality, the pages are labelled, in the right order and orientation.

1. A recession can be defined as a period when output is declining, or as a period when the level of output is below normal, sometimes referred to as its potential level. Look at this [article](https://ir.citi.com/p%2FJ9Uj80%2BaxALKreeY0Z1vUZImLOZOLIB6g4Rv8klN5sDCBZyPvGe3ti1Rfq%2BSM) (<https://ir.citi.com/p%2FJ9Uj80%2BaxALKreeY0Z1vUZImLOZOLIB6g4Rv8klN5sDCBZyPvGe3ti1Rfq%2BSM>), especially Figures 5, 6, and 7, to find out more.

- a. Consider a country that has been producing a lot of oil and suppose that from one year to the next its oil wells run out. The country will be poorer than previously. According to the two definitions above, is it in a recession?
- b. Does knowing whether a country is in recession make a difference to policymakers whose job it is to manage the economy?

2. FRED is a comprehensive up-to-date data source maintained by the Federal Reserve Bank of St Louis in the US, which is part of the US central banking system. It contains the main macroeconomic statistics for almost all developed countries going back to the 1960s and even more for some countries. FRED also allows you to create your own graphs and export data into a spreadsheet. To learn how to use FRED to find macroeconomic data, follow these steps:

- A. Visit the FRED website at: <https://fred.stlouisfed.org/>
- B. Use the search bar and type 'Real Gross Domestic Product US' (GDP) and then graph the series 'Billions of Chained 2012 Dollars, Quarterly, Seasonally Adjusted Annual Rate' by clicking on it. Add the graph to your answer sheet. You can do this by clicking 'Download' and choosing the most suitable data format (for example, a pdf-file).

Use the graph you created to answer these questions:

- C. What is the level of real GDP in the U.S. this year?
- D. FRED shows recessions in shaded areas for the US economy using the NBER definition (see Unit 13). How many recessions has your chosen economy undergone over the years plotted in the chart?
- E. What are the two biggest recessions in terms of length and magnitude?

Now change the graph so that it plots the percent change from one year. You can do this by clicking 'Edit graph' and then change the units of the graph. In addition, add to the graph the quarterly unemployment rate. Again, click 'Edit graph', then add line and search for 'Unemployment'. (You can modify the frequency of the data by clicking 'Edit lines'. Also, units should be in percent for the unemployment rate.) Add also this graph to your answer sheet.

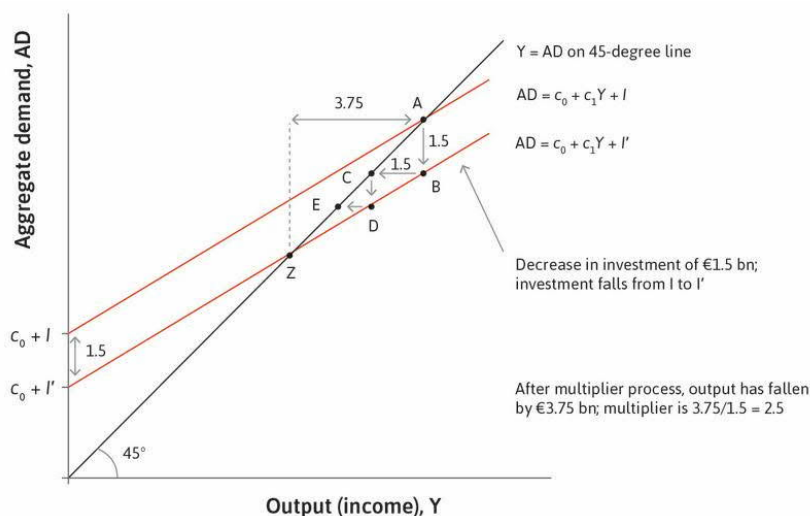
Use this new graph you created to answer these questions:

- F. How does the unemployment rate react during the last two recessions?

- G. What was the level of the unemployment rate during the first and the last quarter of negative growth for those two recessions?
- H. What do you conclude about the link between recession and the variation in unemployment?

3. In the figure shown, a fall in output is caused by a reduction in investment. Which of the following would help restore output to its original level? Explain briefly why.

- A reduction in autonomous consumption.
- An increase in target wealth.
- An increase in actual wealth.
- A tightening of credit conditions.



4. GDP of a country is falling due to a decrease of exports. At the same time the government of the country increases taxes to balance the budget. Assume that the total tax increase is 2 billion (in the domestic currency) and that the marginal propensity to consume is 0.75. (Tip: you may assume that the consumption function is  $C = c_0 + c_1(Y - T)$ , where  $T$  is the amount of taxes and  $c_1$  is the marginal propensity to consume)

- What is the initial effect of the tax increase on aggregate demand?
- What is the total effect on GDP?
- How does the total effect compare to the total effect of 2 billion decrease in government spending?
- Soon after the tax cuts the central bank of the country starts selling the domestic currency in the foreign exchange market. What is the likely impact to GDP?
- Due to the operations of the central bank, inflation increases and interest rate falls such that in the short-run real interest rate decreases. How does this affect investments and GDP?

5. In the US and the UK, loans are widely available based on a rise in home equity. Additionally, unlike in France and Germany where large down-payments (as a percentage of the house price) are required, in the US and the UK only small down-payments are required

for house purchases. On the basis of this information, which of the following statements is correct for the US and the UK when there is a rise in housing prices? Explain briefly why.

- a. There is a positive financial accelerator effect for the existing homeowners who are credit-constrained.
- b. For credit-constrained homeowners, an increase in their house price can increase consumption spending because the higher collateral would enable higher borrowing.
- c. There would be no effect on the consumption of existing homeowners who are not credit-constrained.
- d. Aspiring homeowners are likely to increase saving and reduce their consumption more than they would in France and Germany.