

## Exercise 1

### Introduction to Macroeconomics

1. What are the four macroeconomic agents? What are the three markets in which the agents interact?
2. What is sticky price? Explain why price may be sticky.
3. Explain the four main categories of unemployment.
4. Classify the following events into the categories of unemployment.
  - Some friends just graduated from college and have been looking for jobs.
  - Christine lost her job as a biologist at a biotech-company when the whole industry went into recession.
  - Gerhard, who used to be a taxi driver, stopped looking for a job three months after he lost his job.
  - Dirk used to work as a wooden-doll maker. Now all kids want plastic dolls, so he is out of work.
  - The hotel part-timers were laid off during low season.
  - Aditi, a high-tech engineer, just decided to quit her job; she is being interviewed for a better-paid job in a multinational company.
  - A man lost his job as a public reader as literacy has increased in his village.
5. Suppose there are 100 people in labor force and 60 people currently in employment. Find the unemployment rate. Can we find labor force participation rate? If not, what information do we need?
6. What is the discouraged-worker effect? How can it affect the unemployment rate?
7. On average, nations in Europe pay higher unemployment benefits for longer periods of time than the US. How would this affect the unemployment rates in these nations? Explain which type of unemployment is most directly affected.
8. What is inflation? It is often said that inflation reduces one's purchasing power, and hence inflation is bad. How can inflation reduce one's purchasing power? Is there a case where inflation may not be bad?
9. Who - lender or borrower - is better off, given unanticipated deflation? Explain with examples.

10. When inflation is anticipated, what will the central bank do with the interest rate? (Hint: Fisher Equation)
11. The CPI is 120 in year 1 and 150 in year 2. All inflation is anticipated. If the bank charges an interest rate of 30%, what is the bank's real interest rate?
12. Explain why inflation is necessary to a growing economy with reference to the money supply.
13. What are the two administrative costs of inflation? Explain.
14. Draw a diagram of business cycles and the trend line. Label the four phases of business cycles. Answer the following questions.
  - Which phase do you expect to see inflation?
  - Which phase do you expect to see high unemployment?
  - Which phase should the government use expansionary policy? Give example.
  - Which phase should the government use contractionary policy? Give example.
  - What factors determine the trend line?
15. An article states that capital stock and labor force are both increasing at an annual rate of 7%. The same article also states that real output is growing by 11%. Explain why this is possible.

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### **Answers**

1. The four macroeconomics agents are: Households, Firms, Government, and the Rest of the World. They interact in three markets: Labor Market, Good and Services Market, and Financial Market.
2. Sticky price is when price slowly adjusts to the market equilibrium. This happens when price can't rapidly adjust itself to the market equilibrium due to factors such as minimum wage policy, employment contract, labor union, etc. These factors make it hard for price to go up or down.
3. The four main categories of unemployment are:
  - Frictional unemployment: unemployment that occurs when workers transition from jobs to jobs or quitting their current job in search of new ones.
  - Structural unemployment: unemployment that occurs when there are job openings, but workers have skillsets that do not match those jobs offered.
  - Cyclical Unemployment: unemployment that occurs as a result of the business cycle where during recession, demand for labor declines while wage slowly adjusts due to it being sticky price. This leads to unemployment where firms don't want to hire more workers than the market equilibrium.
  - Seasonal Unemployment: unemployment that occurs as a result of industries that operate by season. In a non-operating season, firms in the industry have lower demands for labor. For example, agricultural industry has less demand for labor in winter.
4. Classification of unemployment:
  - Frictional Unemployment
  - Cyclical Unemployment
  - Not in the Labor Force
  - Structural Unemployment

- Seasonal Unemployment
- Frictional Unemployment
- Structural Unemployment

5. Find

- Unemployment rate =  $40/100 = 40\%$
- We cannot find the labor participation rate because we do not have the population count. Population count is needed to calculation labor participation rate.

6. Answers:

- Discouraged-worker effect is when unemployed people get discouraged and stop looking for jobs, making them exit the labor force.
- Since people not in the labor force (not actively looking for jobs) are not counted as unemployed, it can make the unemployment rate looks low when there are actually more people without a job.

7. Answers:

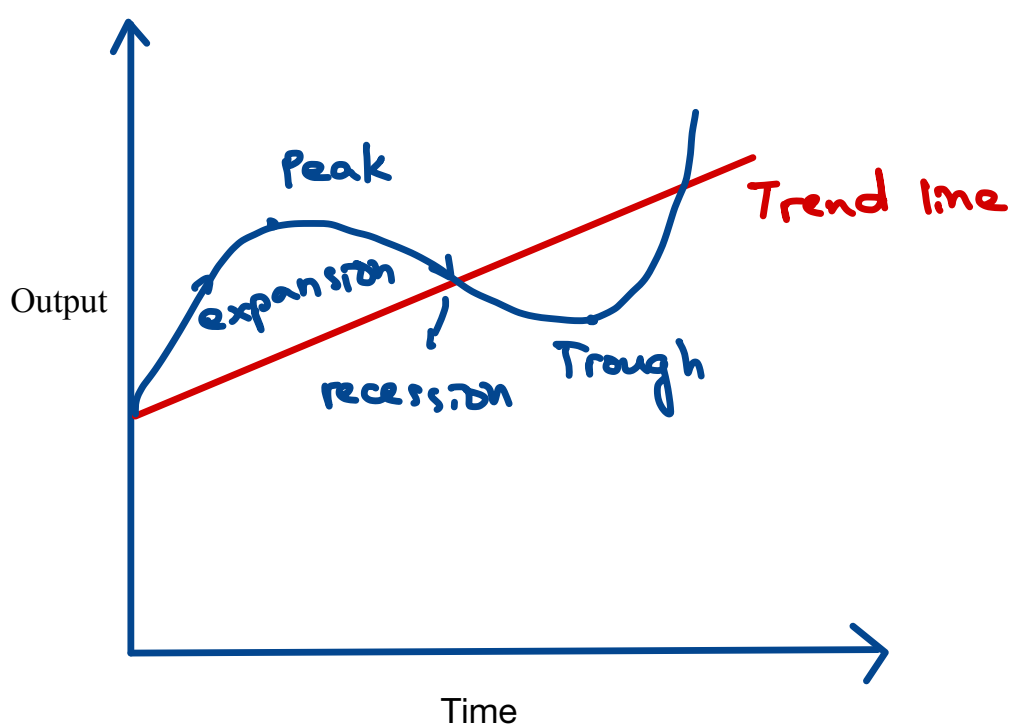
- Larger unemployment benefits can lead to people remaining without a job longer (Marinescu, 2020). As studied, people who are not in the labor force are not counted as unemployed, and thus not providing the real number of people who are without a job. If they were actively looking for a job, the unemployment rates in those countries would be higher.
- Cyclical unemployment rate would be the most affected since people who are out of their job due to recessions would not try to find jobs on the short-term.

8. Answers:

- Inflation is a phenomenon where there is an increase in overall price level.
- An overall price hike means that a unit of money can buy less amount of goods and services, thus reducing its purchasing power. One can say that the money loses its value.
- A case where inflation is not bad is when wages rise relatively at a similar rate to the overall price because wages are considered prices of input. Thus, it does not necessarily one's purchasing power.

9. Given anticipated deflation, the lender would be better off because deflation means an overall decrease of price level. This means during the time of the borrowing, the amount of money borrowed could buy less amount of goods and services, but when the debt is collected after deflation, it could pay for more amount of goods and services. For example, A had borrowed B for \$1 to buy an ice cream that costed \$1. However, A collected the \$1 debt from B after a deflation where the price of the ice cream now costed only \$0.5. This means the \$1 a collected could buy 2\*ice cream compared to the day he lent the money.
10. The central bank will raise the interest rate when faced with an inflation.
11.  $\pi = (CPI_2 - CPI_1) / CPI_1 = (150 - 120) / 120 = 25\%$
12. Inflation is necessary to a growing economy because it is an indicator that prices are rising due to higher demand and an indicator to a more productive economy where are more money circulating in the economy.
13. The two administrative costs of inflation are:
- Menu cost: as prices hike, businesses need to update their price lists, resulting in menu costs.
  - Shoe leather cost: as interest rates rise along with inflation, the opportunity cost of holding the money outside banks is high.

14. Diagram:



- Inflation is expected at expansion phase when the economy is growing, and people are doing well.
- High unemployment rate is expected at the Trough where the economy is stagnant, and people are not doing well economically.
- The government should use expansionary policy when the economy is in recession. For example, the government lowers the interest rate in order to encourage borrowing, and spending of money.
- The government should use contractionary policy when the economy is expanding too fast. For example, the government increases the interest rate in order to discourage spending and purchasing of unreasonable priced assets, to smooth out the business cycle.
- Trend line is determined by the quantity and quality of labor, and capital.

15. Real out put growing by a larger margin to the growth of capital stock and labor force can be owed to the better quality of new labor force that can produce a much higher output.