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## Exercise 1

### Answer

1. The four macroeconomic agents are firm, household, government, and the rest of the world. The three markets in which the agents interact are the goods and services market, labor market, and money market.
2. Sticky price is when the products are not easily changed to the equilibrium price because of some reasons such as employment contract, labor union, or minimum wage policy.
3. The 4 main categories of unemployment are
  - Frictional unemployment is the unemployment in a period when people are looking for or switching for job.
  - Structural unemployment is the unemployment as the result of changes in structure of the economy. The changes in structure of economy can be geographical change, technical change, demand for labor skills change, and labor market rigidities.
  - Cyclical unemployment is when there is economy recession. For instances, people who work in hospitality field lost their job due to country lockdown during Covid-19.
  - Seasonal unemployment is the unemployment when the season changes and make people lose job.
4. Classify the following events into the categories of unemployment:
  - Some friends just graduated from college and have been looking for jobs
    - ↳ Frictional unemployment
  - Christine lost her job as biologist at a biotech company when the whole company went into recession
    - ↳ Cyclical unemployment
  - Gerhard, who used to be a taxi driver, stopped looking for a job three months after he lost

his job.

↳ Discourage unemployment

- Dirk used to work as wooden-doll maker. Now all kids want plastic dolls, so he is out of work.

↳ Structural unemployment.

- The hotel part-timers were laid off during low season.

↳ Seasonal unemployment.

- Aditi, a high-tech engineer, just decided to quit her job; she is being interviewed for a better-paid job in a multinational company.

↳ Frictional unemployment.

- A man lost his job as a public reader as literacy has increased in his village.

↳ Structural unemployment.

$$5. \text{Unemployment rate} = \frac{\text{Unemployment}}{\text{Labor force}} = \frac{100-60}{100} = 0.4 = 40\%$$

- We cannot find labor force participation rate because we need data of population.

6. Discouraged-worker effect is the effect from people who lost their jobs, and later they gave up finding the jobs. This effect will make unemployment rate decrease as number of unemployment and labor force are reduced.

7. These would make unemployment rate in these countries increase. The cyclical unemployment will be most directly affected by unemployment benefit because they need this benefit the most when their economy is in downturn or during recession.

8. Inflation is when overall price increases. Inflation can reduce one's purchasing power because when overall price increases, and wages are fixed, people cannot purchase the same amount of goods and service with same amount of money as before. There is also a case where inflation is not bad as it can keep the value of money when government prints out money in economy circular. A little bit of inflation can help the supply of money from government not be hyperinflation.

9. Lender is the one who is better off given unanticipated deflation. For instance, money that is borrowed today will have more value in the future if there is deflation, and lender's purchasing power will increase as well if they do not anticipate deflation.
10. When inflation is anticipated, central bank will increase nominal interest rate.
11. The bank's real interest is 5%.

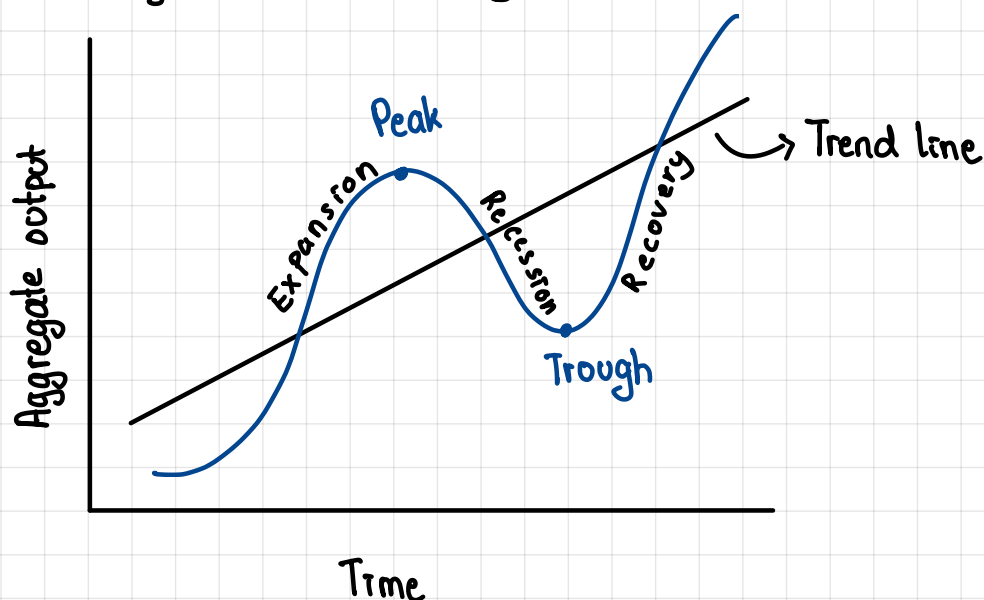
$$\text{Fisher equation } I = r + \pi \Rightarrow r = I - \pi$$

$$r = 0.3 - \frac{150 - 120}{120} = 0.05 = 5\%$$

12. Inflation is necessary in a growing economy given reference to the money supply because inflation can help to avoid hyperinflation in the economy. Inflation allows people to use money more when overall price is increased, so the money's value will not go down.
13. Two administrative cost of inflation are menu cost and shoe leather.

- Menu cost is the cost of changing menu from time to time when there is inflation of inputs or raw materials.
- Shoe leather is the cost of holding cash when there is inflation. In the past, people had to go to bank frequently when there is inflation to deposit money or withdraw money if needed; therefore, there is opportunity cost which is time or shoes.

14. Diagram of business cycle.



- Inflation is expected to be seen in expansion phase.

- High unemployment will be seen in recession phase.
  - Expansionary policy should be used during recession. For example, during Covid-19 pandemic, the economy is slowing down, so the government should reduce taxes for people.
  - Contractionary policy should be used during expansion phase. For instance, when the economy is doing well, people are able to use their money more and more, and it can lead to inflation. Hence, government should raise taxes to slow down the purchasing.
  - Factors that determined the trend line are factors of production.
15. When the capital stock, labor force, and output are increasing, this means the economy is doing well and it's in expansion phase in business cycle. This can happen if there is an increase in quantity of capital and labor by population growth, employing more capital and labor, or there is an increase in quality of capital and labor by education training, research and development.