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**Section 5**

**Question 1:**

**a)**

**Commercial Bank’s Initial Balance Sheet**

|  |  |
| --- | --- |
| Assets | Liabilities |
| Reserves = 0 TL  Treasury Bonds = 0 TL |  |

**Commercial Bank’s Balance Sheet After the Market Operation**

|  |  |
| --- | --- |
| Assets | Liabilities |
| Reserves (+ 5000 TL)  Treasury Bonds (-5000 TL) |  |

**b)**

Since the bank uses its own resources to finance its actions, it can use all the newly coming money in its reserves for loans. Assume the bank gives a 5000 TL deposit to individual B. Individual B transfers her money to individual C, who also puts his money in the bank. Now bank must put 10% of the money in its reserve and can loan 4500 TL to individual D. The process will continue like that: the bank will receive 4500 TL back, loan 4050 TL, receive 4050 TL, loan 3645 TL… Using the formula of ∑ Deposits x 10% = 5000, The bank can deposit a maximum of 50.000 TL. Money multiplier = 1 / rr => Money multiplier = 1 / (1 / 10) => Money Multiplier = 10 => ΔMS = 5000 \* 10 = 50.000 TL = Increase in money supply. The final balance sheet of the bank:

|  |  |
| --- | --- |
| Assets | Liabilities |
| Reserves (+ 5000 TL)  Treasury Bonds (-5000 TL)  Loans (+ 50.000 TL) | Deposits (+ 50.000 TL) |

**c)**

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The increase in money supply shifts the money supply curve to the right. That means there is now more money available in the economy. With the increased money supply, there is now an excess supply of money in the market compared to the money demanded at the original interest rate. This leads to a situation where individuals and businesses have more money than they want to hold. To eliminate the excess supply of money, individuals and companies seek to lend or invest their surplus funds, driving down interest rates. As interest rates decrease, borrowing costs lower, making it more attractive for individuals and businesses to take loans for investment and consumption. The decrease in interest rates continues until the money market reaches a new equilibrium, where the quantity of money demanded matches the increased money supply. This new equilibrium is characterized by a lower interest rate and an increased amount of money in circulation (point e1).

**d)**

AD = C + I + G + NX

MS ↑ i ↓:

C↑:

a) Reduced Cost of Borrowing: Lower interest rates make borrowing more affordable, encouraging individuals and businesses to take loans for purchasing goods and services. This can increase consumer spending on durable goods like cars and houses, leading to increased consumption.

b) Increased Disposable Income: Lower interest rates can decrease the cost of servicing existing debt, such as mortgages or student loans. This leaves individuals with more disposable income, which can be used for consumption.

I↑:

a) Cost of Borrowing for Investment: When interest rates decrease, the cost of borrowing for investment purposes decreases. This can incentivize businesses to take loans to fund new projects or expand their operations, leading to an increase in investment.

b) Expected Returns on Investment: Lower interest rates can make investment projects more attractive. This can stimulate business investment in machinery, equipment, and other productive assets.

G (constant):

The change in interest rates typically does not directly affect government spending, as it is determined by fiscal policy decisions rather than monetary policy. However, lower interest rates can indirectly influence government spending by impacting overall economic activity. If consumption and investment increase due to lower interest rates, it can lead to higher tax revenues and potentially allow the government to allocate more funds for spending.

NX↑:

Interest rate changes may indirectly affect net exports through their impact on the exchange rate. Lower interest rates can lead to lower foreign investment, which in return reduces the value of the domestic currency in the foreign currency market, making exports relatively cheaper and imports relatively more expensive. This can improve net exports and contribute to an increase in the net export component of AD.

**e)**

Commercial banks’ role in the money creation process is critical through fractional reserve banking. When banks receive deposits from customers, they must hold only a fraction of those deposits as reserves, while the rest can be lent out as loans. This creates a multiplier effect, where each initial deposit can lead to the creation of multiple loans and deposits. Suppose banks are reluctant to lend money and prefer to hold excess reserves instead. In that case, a smaller portion of the deposits will be extended as loans, creating fewer new deposits. As a result, the money supply expansion slows down or even stagnates. Also, fewer loans are made for each initial deposit, reducing the multiplier effect. Therefore, the money creation process slows down.

**f)**

One case in which expansionary monetary policy might not have the intended effects due to private agents' behavior is when there is a situation of "liquidity trap.”. A liquidity trap occurs when interest rates are already at or near zero. Despite policies that lead to an increase in money supply, private agents do not respond as expected. In a liquidity trap, the effectiveness of monetary policy becomes limited because private agents' behavior changes in response to the prevailing economic conditions. Some of the reasons for the liquidity trap are listed below:

1. Low-Interest Rates:

In a liquidity trap, interest rates are already very low, often close to zero. The central bank may try to lower interest rates further to stimulate borrowing and investment. However, when interest rates reach extremely low levels, individuals and businesses may not find further interest rate reductions attractive enough to increase their borrowing or investment activities significantly.

2. Preference for Liquidity:

During times of economic uncertainty or pessimism, private agents may become more risk-averse and have a strong preference for liquidity. This means they prioritize holding cash or highly liquid assets rather than engaging in spending or investment activities, even if interest rates are low. This behavior protects them against future economic hardships or uncertain circumstances.

3. Lack of Investment and Spending:

When private agents hold on to their cash or choose to save rather than spend or invest, the intended effects of expansionary monetary policy are diminished. The increased money supply may not be channeled into increased investment, consumption, or lending as expected. As a result, the boost to aggregate demand (AD) may be limited, and the real economy may not experience the desired stimulus level.

**Question 2:**

**a)**

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There is no reason for the unemployment and inflation rates to be changed at point A. Because individuals expect exactly 10% increase in inflation and they build up their contracts and other things accordingly. Therefore, they are “prepared” for the inflation rate and there is no reason for companies to fire some employees. Unemployment will not change even in the SR. The economy is in stable state and works at its potential.

**b)**

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The surprise expansionary policy which is not foreseen by agents, affects the graphic in SR. Initially, the policy cause to move from point A to B since people made contracts according to a 10% inflation rate which happens to be higher. Then, the companies find themselves in situation that the prices of their products are increasing yet the salaries not increase as quick as prices. Hence, they hire more employees and produce more that causes shift from point A to B. However, in the long run, costs are increasing due to tight labor market which make output back to potential level and unemployment back to its natural rate. At this point what we have is only the price levels are increased (point C).

**c)**

In adaptive expectations, agents use the historical data for their economic decisions. They tend to be expect that the current inflation will continue in the same level in the future. If there is something wrong and real inflation is different than expected, then they “adopt” the new inflation rate and build up their expectations accordingly for the next period. However, in rational expectations, agents become more aware and try to collect every information they can and watch the policies closely to predict the next period inflation. In the current situation, agents made adaptive decisions at first but switch to rational expectations quickly after a while. However, if contractionary policy would applied, even if the people has rational expectations adjustments may not happen quickly since the agents wages and price levels are sticky downwards and CB may not be credible. Therefore, for the contractionary policies, every period creates recessionary policies.

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When, authorities apply the expansionary monetary policy repeatedly, at first, people had adaptive expectations that inflation rate will be 10% after all the years of stable inflation. Therefore, at first wave, they were shocked which causes graph to be going from point 0 to 1 and finally 2 as explained in the previous parts. However, now people realizes that there may be something wrong and they started to follow policies closely. When the expansionary policy is applied for the second time, agents are not surprised and they build up rational expectations that in the next period there will be again inflation increase which makes them built up their contracts accordingly. Therefore after a while, all the expansionary policies will just go up in the graph and built up nothing but inflation merely. The unemployment rate will not change even in the short run which makes the situation like the part A with the difference that unemployment stability is maintained by the cost of building up inflation. To sum up, repeated expansionary policies become useless after a while.

**d)**

If the supply side effects take place before demand side effects in response to a low interest rate policy, the consequence would be an increase in productive capacity. When interest rates are low, it becomes cheaper for businesses to borrow money for investment purposes. This leads to an increase in investment spending, which in turn increases the aggregate supply in the economy. As businesses invest in new capital, machinery, and technology, the productive capacity of the economy expands. This allows the economy to produce more goods and services in the long run.

The increase in productive capacity is reflected by a rightward shift of the aggregate supply curve (AS) in the AS-AD model. As supply expands, the economy's potential output also increases, and the long-run aggregate supply curve (LRAS) shifts to the right if supply side effects happens before demand side effects. However, in reality the investment decisions rely on many variables, including business confidence, profitability and expected returns, technological level, and demand outlook. Businesses may not prefer to invest if they do not foresee that demand to their products will increase and also they may be limited by their time’s technology.

**e)**

Inflation is not necessarily to be bad but it makes damage if it can not be foreseen. There will be always winners and losers. I cause mainly the following effects:

1. Reduced purchasing power: Inflation erodes the purchasing power of money over time. When the general price level rises, each unit of currency buys fewer goods and services. This means that individuals and households need to spend more money to maintain the same standard of living. As a result, people's real incomes may decrease, leading to a decrease in their overall purchasing power. This can particularly affect individuals on fixed incomes, retirees, and those with limited financial resources, as their ability to afford necessities and discretionary items diminishes.
2. Uncertainty and distortions: Inflation can introduce uncertainty and distortions into the economy. When inflation rates are high or unstable, it becomes difficult for businesses and individuals to accurately predict future prices and plan for the future. This uncertainty can lead to inefficient resource allocation, as businesses may hesitate to invest and individuals may delay important financial decisions. Additionally, inflation can distort relative prices and undermine the functioning of markets. It may cause misallocation of resources, as businesses and individuals prioritize investments or consumption based on distorted price signals rather than genuine market forces. This can hinder economic efficiency and productivity growth in the long run.

**f)**

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Demands side effects without supply side effects make the less available products more valuable and hence increase their prices. If the conditions given in the questions will be hold, then individuals will try to decrease their consumption since their income increase will be fall in the next period. Also, due to income decrease, demand decrease and competitive market place, companies will try to decrease their prices and build lower contracts or the future. Since everyone believes that CB will decrease inflation, there will be no surprise inflation decrease and since real wages will remain stable, there may be no increase in the unemployment rate. It is good to stress that fast price adjustments only happends under the condition of CB credibility. If CB credible, the contradictionary policies are not necessarily cause recessions.

**g)**

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People with rational expectations will know that if CB is not credible, it may not successfully handle the political pressures and may not make the contractionary policy happen. People are reasonable and do not want to be loser by adjusting their wages to be lower than real inflation by believeing the CB. If CB is not credible, demand may not decrease so fast and hence the production and wages. The slow adjustment of prices makes policy to create more longer periods of unemployment with small price decreases each time in the very long time. It eventually will be back to the point 2 but people will suffer from recessions and that’s where this situation differ from part f.

**h)**

High interest rate makes money expensive which will increase the cost of borrowing. Therefore, borrowers should have to pay more in the future which makes their burden bigger and purchasing power smaller. Lenders will get more money and it becomes more profitable for them to lend their money since the cost of money is high. Therefore, borrowers will lose and lenders will gain.