Principles of Macroeconomics

Solution to Exercises (Final)

I. Single Choice

1-30: DBAAB DACAA CCBAA CBBBC DBADB ACBDD

II. Short Answer and Calculation

1. When the reserve requirement is less than 100 percent, banks can lend out deposits. The money they lend out is redeposited. In this way, deposits can be greater than reserves. Since deposits are greater under fractional-reserve banking and since deposits are part of the money supply, the money supply will be greater under fractional-reserve banking.

2. The money multiplier: 1/0.20 = 5

Maximum money creation: 5 × $100 = $500.

3. Required reserves = Deposits × Reserve ratio = $25,000 × 10% = $2,500

Excess reserves = Total reserves - Required reserves = $3,000 - $2,500 = $500

4. The use of money allows people to trade more easily. When it is easier to trade, specialization increases. Increased specialization increases production and the standard of living.

5. The after tax nominal interest rate is 12% - 12% × 20% = 9.6%.

The after tax real interest rate is 9.6% - 8% = 1.6%.

6. Nominal interest rate (i) = 8%

CPI last year (CPI_0) = 140, CPI this year (CPI_1) = 147

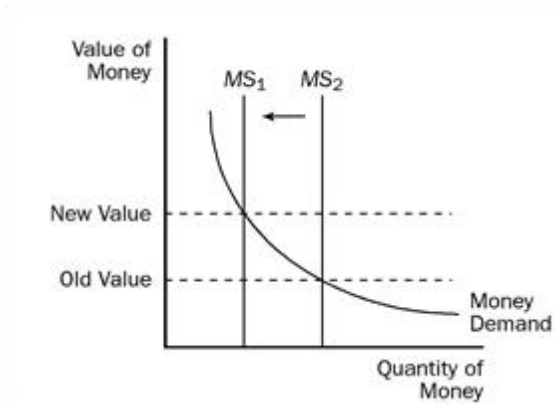
Inflation rate (π) = $(CPI_1 - CPI_0)/CPI_0$ = (147-140)/140 × 100% = 5%

Real interest rate (r) = Nominal rate - Inflation = 8% - 5% = 3%

7. Price level last year (P_0) = 135, Price level this year (P_1) = 140

Inflation rate (π) = $(P_1 - P_0)/P_0$ = (140-135)/135 × 100%≈3.7%

8.



When the central bank sells government bonds, the money supply decreases. This shifts the money supply curve from MS_2 to MS_1 and makes the value of money increase. Since money is worth more, it takes less to buy goods with it, which means the price level falls.

9. When people expect the price level to increase, wage bargaining will lead to higher wages. The increase in wages raises the costs of production. So firms will supply less at any actual price level.

10. The aggregate demand curve would shift to the right.

Short-run effect: Higher output (Y) and higher price level (P).

Long-run effect: If the economy is at full employment, only prices rise (SRAS adjusts leftward).

11. Output falls and prices increase

12. A decrease in aggregate demand causes the price level to fall. If the government takes no action to counter this, then the actual price level will be below the price level that people expected. Individuals will eventually correct their expectations about the price level. As they do so, prices and wages will adjust accordingly, shifting the aggregate supply curve to the right. For example if wages are sticky, in light of the lower price level, firms and workers will eventually make bargains for lower nominal wages. The reduction in wages lowers costs of production, so firms are willing to produce more at any given price level. Consequently, the short-run aggregate supply curve shifts right. The rightward shift in aggregate supply eventually causes output to rise back to the natural rate.

13. (1) The multiplier is 1/(1-MPC) = 1/(1-0.8) = 1/0.2 = 5.

The increase of $150 in government expenditures leads to a shift of $150 billion x 5 = $750 billion in aggregate demand.

The increase in taxes decreases income by $150 and so initially decreases consumption by $150 billion x MPC = $150 billion x .8 = $120 billion.

This change in consumption will create a multiplier effect of $120 billion x 5 = $600.

Thus the net change is $750 billion - $600 billion = $150 billion.

(2) The changes don't cancel each other out because a tax increase decreases consumption by less than the tax increase.

14. Multiplier = 1/(1-MPC) = 1/(1-0.5) = 2

15. An MPC of .9 means the multiplier = 1/(1 - .9) = 10. The increase in aggregate demand equals the multiplier times the change in government expenditures. So to increase aggregate demand by $10 billion, the government would have to increase expenditures by $1 billion.

16. The nominal interest rate on currency is zero. The next best alternative is to buy a bond and earn interest. Currency is used as a medium of exchange. Bonds are illiquid and so are costly to convert to a medium of exchange.

17. Short Run: Higher money supply lowers interest rates → boosts investment and AD → output rises, unemployment falls.

18. Sacrifice Ratio = % loss in output needed to reduce inflation by 1%.

Steeper Phillips Curve = Larger unemployment change for a given inflation change.

A steeper Phillips curve makes the sacrifice ratio smaller.

19. Short Run: Firms set wages based on expected inflation (5%), but actual inflation is lower (3%).

Real wages rise unexpectedly → firms hire less → unemployment rises.

20.

A. AD-AS Short-Run Effects:

AD shifts left (lower net exports) → output (Y) ↓ and price level (P) ↓.

So, the price level and output both fall.

B. Short-Run Phillips Curve Effects:

Lower inflation (due to lower P) and higher unemployment (due to lower Y).

So, the inflation rate falls and unemployment rises.

C. Central Bank Policy to Reverse Shock:

Expansionary monetary policy (increase money supply, lower interest rates) → AD shifts right, restoring output.

So, the central bank should increase the growth rate of the money supply.