Consider a hypothetical economy where:

- **C(Yd) = 12 + 0.75 × (Y – T)**
- **I(r) = 124 – 1 × r**
- **G = 120**
- **t = 20%**

1. **Using the information above, write out the planned Aggregate Expenditure equation. (Hint: Remember that this takes the form of AE = ...)**

AE = C(Yd) + I(r) + G
AE = 12 + 0.75 × (Y – T) + 124 – 1 × r + 120
AE = 12 + 0.75 × Y – 0.2Y + 124 – r + 120
AE = 12 + 0.75 × 0.8Y + 124 – r + 120
AE = 12 + 0.75 × 0.8Y + 124 – r + 120
AE = 12 + 0.75 × 0.8Y + 124 – r + 120
AE = 256 + 0.6Y - r

2. **Write down an expression for the Investment-Savings (IS) Curve. (Hint: First use the AE equation to find an expression for equilibrium Y . Next, remember that the IS equation takes the form of r = ...)**

Y=AE
Y= 256 + 0.6Y - r
0.4Y= 256 - r
Y=640 - 2.5r

-2.5r+640=Y
-2.5r=Y-640
r=-0.4Y+256

3. **Assume that inflation is zero, so that i = r. This economy's central bank follows a given Monetary Policy Rule: r = i = 0.025 × Y + 0.0003 × P , where P is the price level. Given this and the expression for the IS Curve, write down an expression for the Aggregate Demand Curve. (Hint: Remember that the AD Curve takes the form P = ...)**

r= -0.4Y+256
r= i = 0.025 × Y + 0.0003 × P
-0.4Y + 256 = 0.025Y + 0.0003P
0.0003P= -0.4Y + 256 - 0.025Y
0.0003P= -0.425Y + 256
P=853333.33-1416.66Y

4. **Suppose that the price level (P) is 3333.33. What is the equilibrium value of aggregate income, Y ? (Hint: use the AD equation.)**

P=3333.33
P=853333.33-1416.66Y
3333.33=853333.33-1416.66Y
-1416.67Y=-850000
Y=600

5. **What are the equilibrium values of the interest rate, r, and investment, I? (Hint: use the MP R or IS, and I(r) equations.)**

r = -0.4Y+256
r=-0.4(600)+254
r=-240+254
r=14

I(r) = 124 – 1 × r
I(r) = 124 – 14
I(r) = 110

6. Suppose that the price level (P) falls to 500. What is the equilibrium value of aggregate income, Y ?

P=500
P=853333.33-1416.66Y
500=853333.33-1416.66Y
-852833.33=-1416.66Y
Y=602

7. What are the new equilibrium values of the interest rate, r, and investment, I?

r = -0.4Y+256
r=-0.4(602)+254
r=-240.8+254
r=13.2

I(r) = 124 – 1 × r
I(r) = 124 – 13.2
I(r) = 110.8

8. Discuss why the change in the price level has the identified impacts on Y , r and I.

Price levels decrease from $3333.33 to $500. This has increased Y from 600 to 602, decreased r from 14 to 13.2 and increased I from 110 to 110.8.

Impact on Y

According to the law of demand when price decreases demand increases. This is because consumers are able to afford a higher amount of goods with the same level of income (increase in purchasing power) thus they are more likely to purchase more goods and services (AD curve shift to the right). As a result real GDP will increase (Y) as equilibrium is restored at a higher output (600 to 602).

Impact on r

Consumer's purchasing power has increased, therefore they have more money left over after purchasing goods. As a result the amount of savings from households increase. Interest rates are used as an incentive for consumers to save by banks - as consumers are saving more regardless of interest rates banks will decrease their rates. As a result interest rates decrease from 14 to 13.2.

Impact on I

Whether a firm decides to invest in new capital depends on whether the expected profits from that machinery and those plants justify their costs. When the interest rate falls, it becomes less costly to borrow and more investment projects are likely to be undertaken; reducing the interest rate, ceteris paribus , is likely to increase the level of planned investment spending. In this model investment spending increased from 110 to 110.8.

Overall impact

When price levels decreased from $3333.33 to $50 Y increased from 600 to 602 as a result of increased purchasing power. As the value of money increased banks decreased interest rates from 14 to 13.2 as they required less incentives for consumers to save. As interest rates decreased it became less costly (more profitable) to invest, therefore investment increases from 110 to 110.8.