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Aggregate Demand and Aggregate Supply

In the first quiz, you have found that the IS relation is given by $Y = \frac{c_0 + b_0 + \bar{G}}{1 - c_1(1-t)} - \frac{b_1}{1 - c_1(1-t)} i$

And the LM relation is given by $i = \frac{1}{m_2} (m_0 - \frac{M'}{P} + m_1 Y)$ in the Republic of Keynesia.

Let $\frac{1}{1 - c_1(1-t)} = \lambda$ for simplicity.

1. Derive the expression for aggregate demand using the above equations. Is the AD curve upward- or downward-sloping?

To derive the AD curve, we can substitute in for i into the IS equation from the LM equation.

$$Y = \lambda(c_0 + b_0 + \bar{G}) - \frac{\lambda b_1}{m_2} (m_0 - \frac{M'}{P} + m_1 Y)$$

$$Y + \frac{\lambda b_1 m_1}{m_2} Y = \lambda(c_0 + b_0 + \bar{G}) - \frac{\lambda b_1}{m_2} (m_0 - \frac{M'}{P})$$

$$Y(\frac{m_2 + \lambda b_1 m_1}{m_2}) = \lambda(c_0 + b_0 + \bar{G}) - \frac{\lambda b_1}{m_2} (m_0 - \frac{M'}{P})$$

$$Y = \frac{m_2 \lambda}{m_2 + \lambda b_1 m_1} (c_0 + b_0 + \bar{G}) - \frac{\lambda b_1}{m_2 + \lambda b_1 m_1} (m_0 - \frac{M'}{P})$$

The AD curve is downward-sloping in the (Y, P) space.

$$\frac{\partial Y}{\partial P} = - \frac{\lambda b_1 M'}{m_2 + \lambda b_1 m_1} (-1)(-\frac{1}{P^2}) < 0$$

Intuitively, for an increase in the price level, there is a decrease in the real money stock, which leads to an increase in the interest rate. The increase in the interest rate causes a decrease in the demand for goods, which leads to a decrease in output. This implies that the