Economics 302
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Aggregate Demand – Aggregate Supply

1. The Basic Model with Expected Inflation Set to Zero

Consider the Phillips curve relationship in the textbook (equation 9.1, page 223):

$$\frac{P_t - P_{t-1}}{P_{t-1}} \equiv \pi_t = \pi_t^e + f\left(\frac{Y_{t-1} - Y^*}{Y^*}\right)$$

In order to analyze the model more closely, let's make a simplifying assumption, namely that expected inflation is zero. This leads to:

$$\frac{P_t}{P_{t-1}} - 1 \equiv \pi_t = f\left(\frac{Y_{t-1} - Y^*}{Y^*}\right) \quad \text{Rearranging: } \frac{P_t}{P_{t-1}} = 1 + f\left(\frac{Y_{t-1} - Y^*}{Y^*}\right)$$

Multiplying both sides by the previous price level:

$$P_t = P_{t-1} + P_{t-1} \times f\left(\frac{Y_{t-1} - Y^*}{Y^*}\right)$$

This equation indicates that the current price level is equal to last period's price level if output last period equaled potential GDP. It will be higher than last period's if last period's output exceeded potential.

Now consider what would happen starting from a position of initial rest. Assume to begin with in periods 0 and 1 $Y_t=Y^*$, and $A_t=A_1$, $M_t=M_1$. Then suppose in period 2, autonomous spending increases to A_2 (perhaps because of an increase in government spending). Then output rises in period 2 to Y_2, but the price level stays constant. Only in period 3 does the price level rise (since $Y_2 > Y^*$).

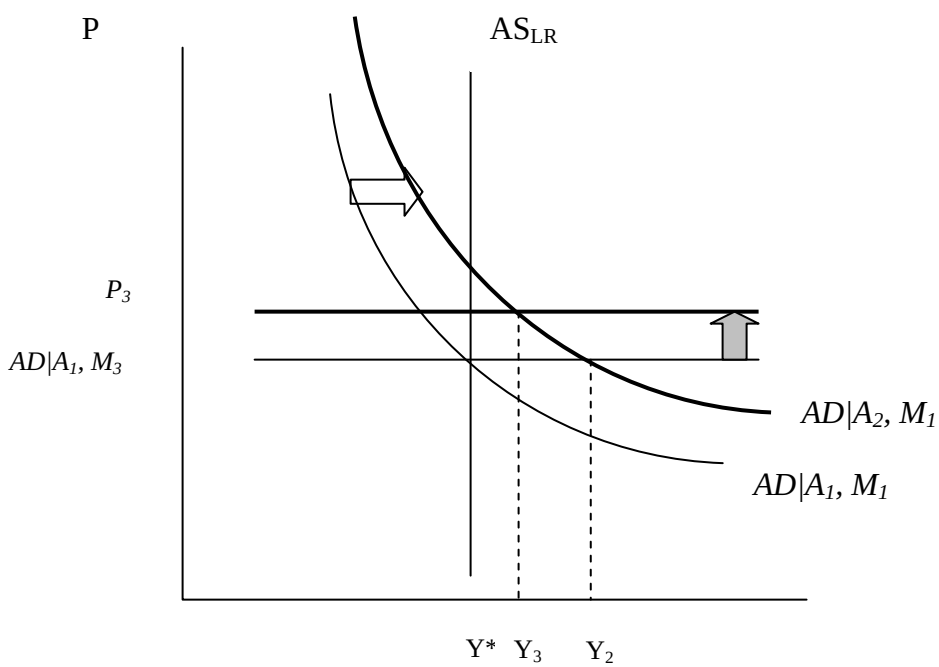

Figure 1: Note $A_2 > A_1$

How does this AD-AS diagram relate to the IS-LM diagram we used before? One way to think about the diagram is that movements along the predetermined price line were consistent with the solution of the IS-LM diagram. To see what happens in the process of adjustment to lower income as the price level rises, consider this pairing of diagrams.

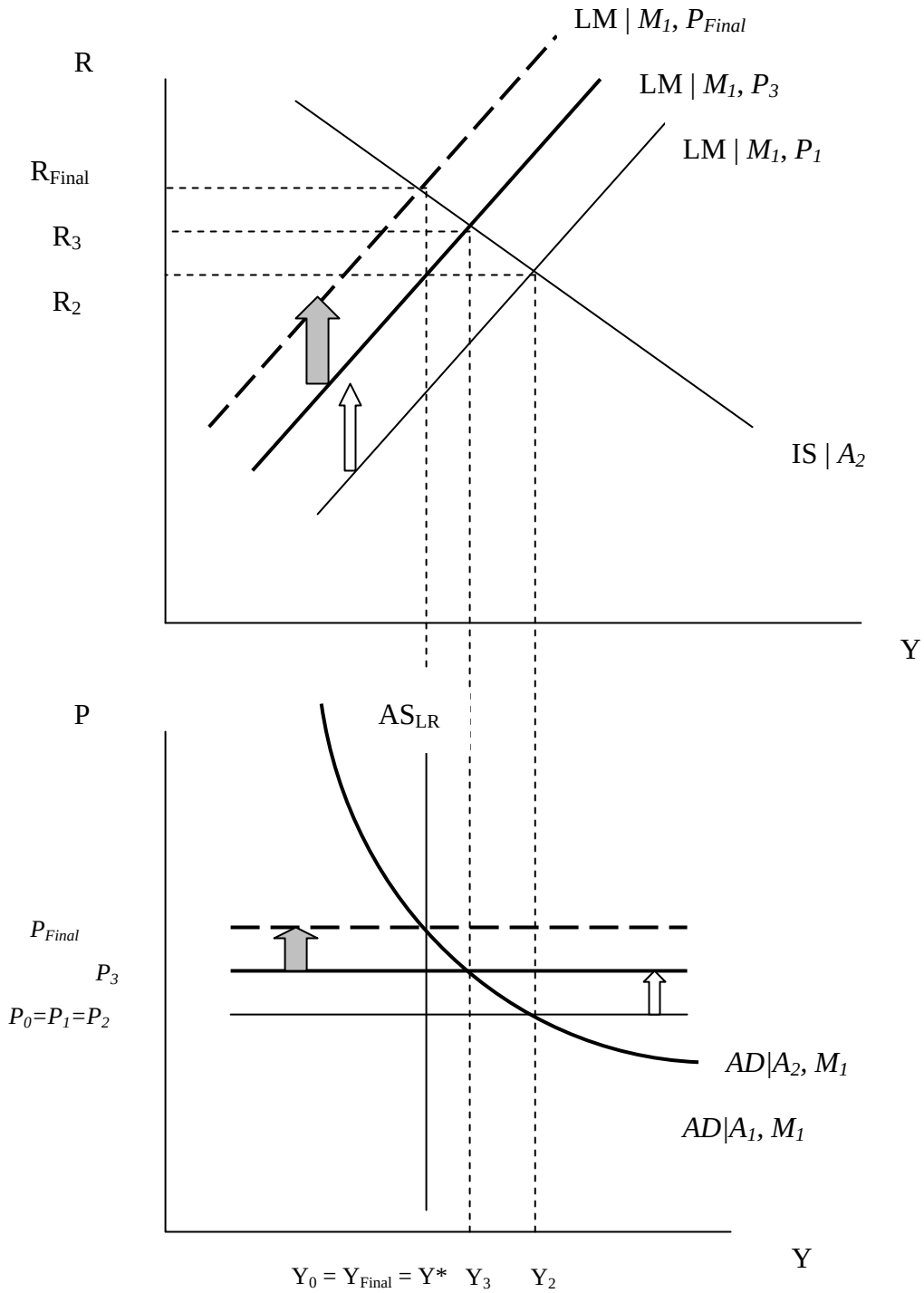

Figure 2: Note $P_3 > P_2$

Notice that over the longer term, the price level keeps on rising (as long as output exceeds potential GDP), the real money stock keeps on falling, shifting back the LM curve, until finally output equals potential, the price level equals P_{Final} , the interest rate equals R_{Final} .