Price Shock and AS Shift Answers
Econ 311
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Suppose that for an economy the central bank has an inflation target of $\bar{\pi} = 2\%$ and the AD curve is

$$\pi = \left(\frac{x-1}{b \bar{m}}\right) \bar{Y} + \left(\frac{\bar{a}}{b \bar{m}}\right) + \bar{\pi}$$

and the AS curve is $\pi_t = \pi_{t-1} + \bar{v} \bar{Y}_t + \bar{\sigma}$ where $\bar{b} = \frac{1}{2}$, $\bar{m} = \frac{1}{2}$, $\bar{v} = \frac{1}{2}$, $\bar{x} = 0$.

1. Draw the AD-AS diagram in the steady state in period zero and indicate the inflation rate and short run output level. Hint: what are $\bar{a}$ and $\bar{\sigma}$ in the steady state?

![AD-AS Diagram](image)

2. Suppose that a price shock hits the economy in period one and $\bar{\sigma} = 2\%$. What is the value of $\pi_1$ and $\bar{Y}_1$? Hint: Solve AD and AS simultaneously.

$$\left(\frac{x-1}{b \bar{m}}\right) \bar{Y}_t + \left(\frac{\bar{a}}{b \bar{m}}\right) + \bar{\pi} = \pi_{t-1} + \bar{v} \bar{Y}_t + \bar{\sigma}$$

$$\left(\frac{-1}{\frac{1}{2}}\right) \bar{Y}_t + 0.02 = 0.02 + \frac{1}{2} \bar{Y}_t + 0.02$$

Solving gives:
\[ \tilde{Y}_1 = -0.00444, \quad \pi_1 = 0.03777 \]

3. Draw the new AS curve on the figure above.

Point 2 above

4. Suppose that in period 2 the inflation shock goes away and \( \bar{\sigma} = 0 \) once again. What is the value of \( \pi_2 \) and \( \tilde{Y}_2 \)? Hint: Solve AD and AS simultaneously and use \( \pi_1 \) from your answer to #2.

\[
\left( \frac{\bar{x} - 1}{\bar{b} \bar{m}} \right) \tilde{Y}_t + \left( \frac{\bar{a}}{\bar{b} \bar{m}} \right) + \bar{\pi} = \pi_{t-1} + \bar{v} \tilde{Y}_t + \bar{\sigma}
\]

\[
\left( \frac{-1}{\frac{1}{2} \times \frac{1}{2}} \right) \tilde{Y}_t + 0.02 = 0.03777 + \frac{1}{2} \tilde{Y}_t
\]

Solving gives:

\[ \tilde{Y}_2 = -0.003948, \quad \pi_2 = 0.03579 \]

5. Draw the new AS curve on the figure above.

See point 3