1. Recall that $\Delta M/M + \Delta v/v = \pi + \Delta Y/Y$

   a. Consider the nation of Kydland. Before the shock to Kydland’s economy, $\Delta M/M = 10\%$, $\Delta v/v = 3\%$, real growth = 4%. What is inflation?
   
   Inflation = 9\%

   b. In Kydland, $\Delta v/v$ falls to 0%, but $\Delta M/M$ stays the same. In the long run, what will inflation equal? What will real growth equal?
   
   Inflation = 6\%, real growth = 4\%

   c. Consider the nation of Prescottia. Before the shock to Prescottia’s economy, $\Delta M/M = 2\%$, $\Delta v/v = 4\%$, real growth = 2%. What is inflation?
   
   Inflation = 4\%

   d. In Prescottia, $\Delta v/v$ rises to 8%. In the long run, what will inflation equal? What will real growth equal?
   
   Inflation = 8\%, real growth = 2\%

   e. Consider the nation of Friedmania. Before the shock to Friedmania’s economy, $\Delta M/M = 3\%$, $\Delta v/v = 0\%$, real growth = 3\%. What is inflation?
   
   Inflation = 0\% (Milton Friedman sometimes recommended this inflation rate.)

   f. In Friedmania, $\Delta M/M$ falls to 1%. In the long run, what will inflation equal? What will real growth equal?
   
   Inflation = –2\%, real growth = 3\% (In other writing, Friedman recommended a –2\% inflation rate so that money would rise in value over time, a policy known as the Friedman rule.)

2. We’ve just reviewed the quantity theory, which is a theory that shows how the economy fixed itself in the long run. But as economist John Maynard Keynes famously said, “In the long run we are all dead.” Let’s bring SRAS back into the model, and play the role of a central banker reacting to a rise in velocity growth.

   a. The diagram below shows the economy growing at the Solow growth rate with 10\% inflation. Illustrate what happens if consumers and investors become more optimistic. Clearly label the new growth rate on the x-axis with the words “high-AD real growth,” and label the new inflation rate on the y-axis with the words “high-AD inflation.”
b. Once the central banker sees this rise in AD, she decides to fully reverse it with monetary policy. In the graph above, illustrate what happens if she does her job just right. The AD curve returns to its starting point, so no new AD is drawn.

c. If she does her job just right, what will the inflation rate be? Provide an exact number. **Inflation will return to 10%**.

3. Let’s look at the Federal Reserve’s dilemma when there’s a positive shock to the Solow growth rate. We’ll consider the reverse of Figures 16.3 and 16.4.

a. In the following figure, illustrate the effect of this positive Solow growth shock, ignoring the possible effect of sticky wages and prices.
b. If the central bank kept AD fixed, would inflation be higher or lower after this positive real shock? Would real growth be higher or lower after this positive real shock?
With a positive Solow growth shock, we see in the figure that real growth is higher and inflation is lower.

c. If the central bank wants to return inflation to its old level, should it raise money growth or lower it?
To return inflation to its old level, the central bank must increase AD by raising money growth.

d. If the central bank wants to return real growth to its old level, should it raise money growth or lower it?
To return real growth to its old level, the central bank must decrease AD by lowering money growth.

e. Economists say that central bankers face a “cruel trade-off” between inflation and real growth when a Solow growth shock hits. Do your answer to parts c and d fit in with this theory?
Yes, this is a “cruel trade-off.” The central bank can’t simultaneously raise money growth and lower money growth: It can only meet its inflation goal or its real growth goal, not both.

4. All of the following are called “rules.” Which of the following so-called rules are actually like “rules” and which are more like “discretion”? How can you tell the difference?

a. Congress passes a law providing automatic cost of living increases to Social Security every year. (Note: This is current U.S. law.)
b. Congress follows a rule to vote every few years on how much to increase Social Security payments—votes that usually occur just before an election. (This was the law before 1972.)

c. The Federal Reserve follows the famous “Taylor rule” for setting the Federal Funds rate: 
Nominal rate = 2% + Inflation + 0.5 × (Real growth – Solow growth rate)

d. The Federal Reserve follows a rule of “doing whatever seems right at the time.”

e. The police follow a rule of questioning anyone loitering outside of a bank who looks suspicious.

f. The police follow a rule of questioning anyone loitering outside of a bank who is dressed in bulky clothing that could conceal a weapon.

Choices b, d, and e sound like “discretion.” In each of these cases, the final decision is just a matter of somebody’s judgment; there’s no precommitment. The other examples are rules that commit somebody to a genuine course of action. The contrast is especially clear between choices c and d: Alan Blinder, in his book Central Banking in Theory and Practice, laments the fact that so many central bankers openly admit to following choice d.
5. Let’s consider a case that has some similarities to Figure 33.2. We mentioned that it’s difficult for the Fed to know what’s really happening to the economy in real time. This is similar to the well-known “fog of war,” where wartime news accounts often turn out to be exaggerations of the real story. In this question, the Federal Reserve thinks that consumer pessimism has pushed AD down by 10%, but in reality, the pessimism has only pushed AD down by 5%.

a. In the figure below, illustrate two AD curves: “AD with false shock” (AD-F to save room) and “AD with true shock” (AD-T).

b. If the central bank wants to use monetary policy to reverse a 10% shock to AD, it will have to raise money growth by 10%. Now draw two more AD curves on the figure above: “Fed reacts to false shock” (FR-F to keep it short) and “Fed reacts to true shock” (FR-T).

Solution

c. After the central bank overreacts to the exaggerated news reports of economic calamity, what is the final result: Will real growth be higher or lower than before the shock hit? Will inflation be higher or lower than before the shock hit?

d. See the figure above.

c. After the Federal Reserve overreacts to the bad news, inflation will be higher and real growth will be higher than before the shock.

6. Which of the following would be methods that the Fed could use to “maintain market confidence” when a negative AD shock hits?

a. Slow the growth rate of the monetary base.

b. Raise the interest rate on “discount window” loans.

c. Promise to increase the growth rate of money if the economy worsens further.

d. Sell Treasury bills and buy bank reserves through open market operations.

e. Pay a higher interest rate on reserves.

6. Option c is the only one that would help market confidence in normal cases. The rest would tend to lower money growth.

7. When talking about the economy, people often make a distinction between policies that work “only in theory” compared to those that work “in practice.” In theory, a fall in money growth slows down the economy in the short run. In the six episodes since World War II when, as we discussed, the Fed deliberately put the brakes on money growth, did this theory work “in practice” every single time, most of the time but not all of the time, or did this theory fail most of the time?

7. This theory worked every single time in practice: Theory and practice have told the same story for the last six decades.

8. A monetary policy is said to be credible if the central bank will have an incentive to do tomorrow what it says today that it will do tomorrow. Other policies may be credible or noncredible. Which of the following policies are credible?

a. A student promises to study for the final after going to the frat party.

b. A long-established store offers “Guaranteed satisfaction or your money back.”

c. A government promises never to bail out banks that take on too much risk and go bankrupt.