Policy in the AS/AD Model

Revised: August 1, 2012

We've seen that aggregate demand and supply can shift on their own or, sometimes, as a result of changes in policy, including monetary policy. But what policy changes are called for? Should we always shift the aggregate demand curve to maintain low inflation? High output? Are these two objectives in conflict? The short answer: we should respond differently to changes in supply and demand.

Objectives of policy

The traditional guide to policy is the invisible hand: if markets work well, then we simply leave them to do their job. If not, we may act to facilitate their operation. In the aggregate demand and supply framework, the idea is that the long-run aggregate supply curve is where the uninhibited operation of markets would lead us. In the short run, sticky wages (or other market imperfection) may resist, but that's where the invisible hand would direct us. One consequence: there's no compelling reason to change aggregate demand to increase output beyond its long-run equilibrium value. We might be able to do it, but it won't make us better off. In a sense, we will have tricked people into working more than they want, typically by reducing their real wages through inflation.

The first objective of policy, then, is to get output as near as possible to the level associated with the long-run aggregate supply curve AS^*. This is important enough a concept that people have given it lots of names: potential output, full employment output, and so on. We'll call it *potential output*, with the understanding that it's the long-run equilibrium, not an upper bound. The *output gap* is a related concept: the difference between actual and potential output. In practice, potential output is a little slippery, because the long-run aggregate supply curve isn't something we observe. We have a variety of ways of estimating potential output, ranging from the complex (the Fed's methodology, described in a link listed at the end of these notes) to the pragmatic (a smooth trend line drawn through actual output).

The second objective of policy is price stability. That's not an obvious implication of the invisible hand, but experience has taught us that low and stable rates of inflation are associated with good macroeconomic performance. You might ask whether we'd be better off with no inflation, low inflation (say 2 or 3% a year), or even modest deflation (yes, there are theoretical arguments for that). Experience suggests it doesn't matter: any stable target is better than the high and variable inflation the US and many other countries experienced in the 1970s.

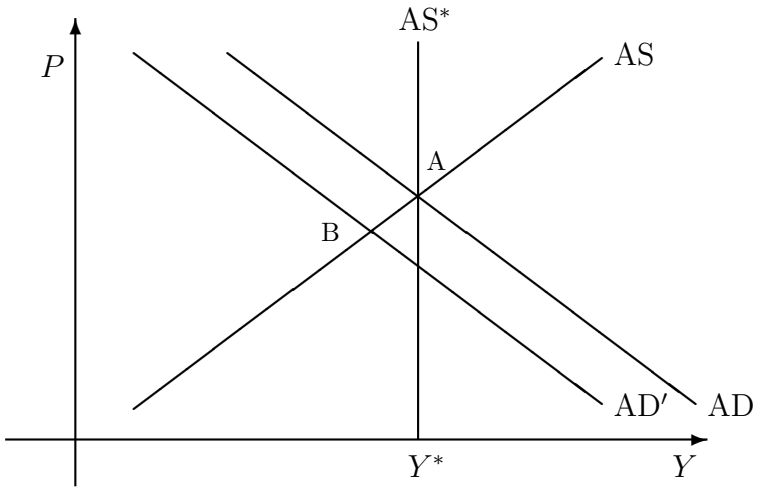

Figure 1: Impact of an adverse demand shock. Aggregate demand AD shifts left to AD′, moving the short-run equilibrium from A to B.

Policy responses to supply and demand shocks

With potential output and stable prices as our objectives, how should policy respond to changes in aggregate supply or demand? Curiously, the answer depends on whether we face supply or demand shocks.

How should we respond to demand shocks? Consider a negative demand shock, illustrated by Figure 1. The long-run equilibrium is point A, where aggregate supply AS* and aggregate demand AD cross. Suppose consumer pessimism shifts the aggregate demand curve to AD′, leaving us at point B. What should we do? If we do nothing, we fail on both of our objectives: output is below potential and prices have fallen. The appropriate policy, then, is to shift the demand curve back to AD, perhaps by expanding the money supply.

That's a general rule: policy should offset demand shocks. In this case there is no conflict between our two goals of hitting potential output and maintaining stable prices. The policy lesson: we should resist or offset demand shocks.

How should we respond to supply shocks? Consider the situation depicted in Figure 2: an adverse supply shock that moves us from A to B. Should policy try to offset the decline in output? If we follow our logic, the answer is no: we want to move output as close to the long-run aggregate supply curve AS*′ as possible. We do this by moving the aggregate demand curve left until it intersects both aggregate supply curves at point D. At this point, the price level is the same as it was at A, so we have delivered stable prices. Output has fallen more than if we had not acted, but that's what the invisible hand suggests. The policy lesson: we should reinforce or accommodate supply shocks.

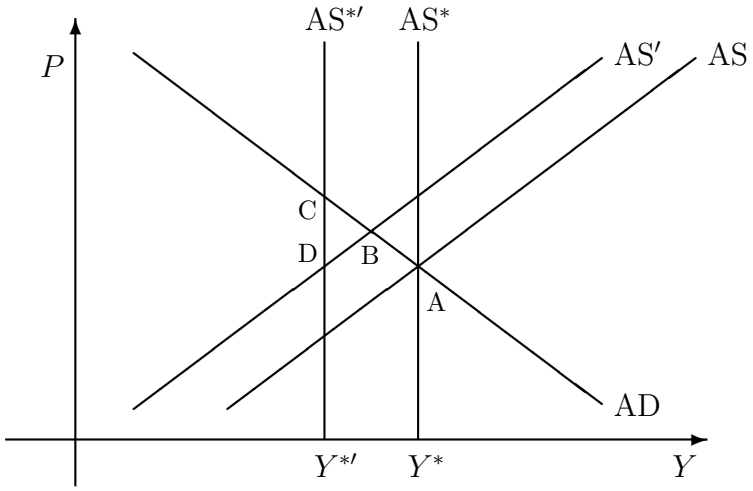

Figure 2: Impact of an increase in the price of oil. Aggregate supply curves shift left from AS/AS* to AS′/AS*′, moving the short-run equilibrium from A to B.

The basic lesson, then, is that we want to react differently to changes in output that result from supply and demand shocks. We should resist demand shocks and "accommodate" supply shocks. The difficulty in practice is knowing which is which. If we guess wrong, we can make things worse, perhaps a lot worse.

By some interpretations, the Fed made exactly that mistake in the 1970s. With output falling and inflation rising, the Fed increased the money supply to keep output up. With hindsight, the OPEC oil price increase is understood to be an adverse supply shock. It reduced output, but there was little we could do about it. When we increased the money supply, the consequence was that low output was accompanied by even higher inflation than before. Having failed to understand the nature of the problem, we gave it a name: stagflation.

Executive summary

1. We typically think of the goals of macroeconomic policy as keeping inflation low and output near the long-run supply curve.

2. As a general rule, policy should resist changes in output triggered by shifts in demand and accommodate changes triggered by shifts in supply.

Review questions

1. Stimulus in China. In 2009, China responded to the financial crisis by implementing a massive program of government spending on infrastructure. Your

mission is to outline the argument for or against such a program using the aggregate supply and demand (AS/AD) framework.

(a) Over the last year, output growth and inflation have both fallen in China. Would you say this comes from a shift in supply or demand? Illustrate your answer with the appropriate diagram.

(b) Describe the impact of a large increase in government spending on infrastructure projects. What is the likely impact on output? Inflation?

(c) What are the traditional goals of macroeconomic policy, expressed in terms of aggregate supply and demand? Does the Chinese spending program move them closer to these goals?

Answer.

(a) Shifts in demand move output and prices in the same direction, shifts in supply move them in opposite directions. (By longstanding tradition, we interpret output as output growth and prices and inflation.) Since they both fell, we would interpret this as a shift left in demand.

(b) This is a purchase of goods, therefore affects demand. A shift right in demand increases output growth and inflation.

(c) The goals are (i) output equal to the long-run aggregate supply curve AS^* and (ii) stable prices. The answer depends where you start: are we to the left of AS^* prior to the stimulus? If so, then the stimulus program moves output in the right direction. Ditto with inflation: if we start with stable prices, the stimulus generates inflation.

2. Aggregate supply and demand in the Euro Zone, May 2008. As the CFO of Heineken International, you are considering the likely evolution of interest rates in the Euro Zone. You quickly run through the following questions:

(a) Over the 2-year period as a whole, what has happened to inflation and output? See Figure 3; nothing is needed beyond what you see there.

(b) In the aggregate supply and demand framework, do you think the movements in prices and output you mentioned above suggest a shift in supply or demand? Why? In principle, how should the European Central Bank respond to such a shift?

(c) How do you think the European Central Bank is likely to respond? How do you see short-term Euro Zone interest rates moving over the next 12 months? Why?

Answer.

(a) Inflation is up sharply, output is flat to down.

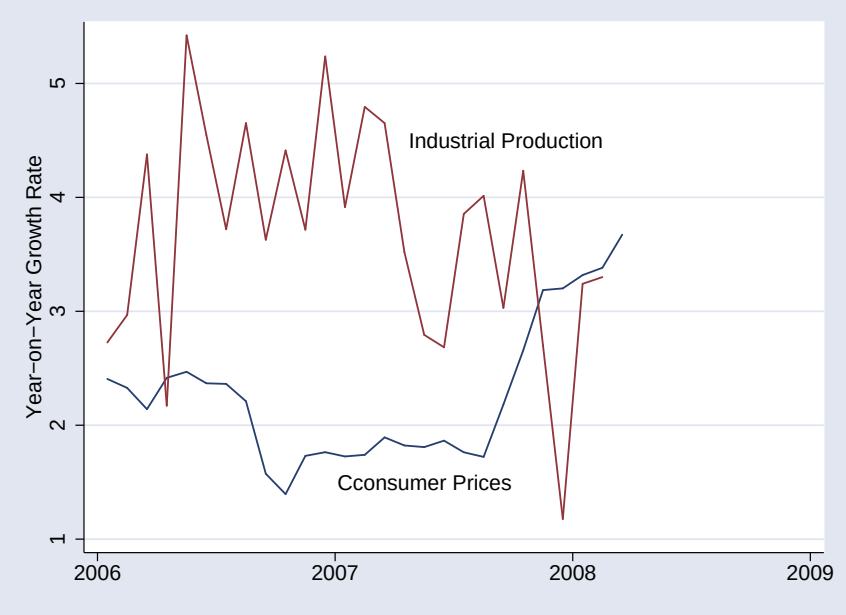

Figure 3: Growth in prices and industrial production in the Euro Zone.

(b) The combination in (a) suggests a shift up/left in supply. Why? Because output and inflation have moved in opposite directions. Since supply shocks should be accommodated/reinforced, the ECB should raise the short-term interest rate.

(c) The ECB's primary mission is stable prices, so you should see an increase in interest rates. This could also be expressed in terms of a Taylor rule, possibly with a larger coefficient on inflation than output growth.

3. Current economic conditions.

   (a) What have inflation and GDP growth been over the past quarter? Year?

   (b) Using this information and anything else you think is appropriate, where is the economy relative to the long-run equilibrium level of output Y^*?

If you're looking for more

The measurement of potential output has generated some interesting debate. Here is a range of opinion on the subject:

- Former Fed Governor Frederic Mishkin's speech.
- Robert Hall's critique of standard practice or (better yet) Greg Mankiw's lucid and short summary and discussion. The essence of Hall's argument is that

potential output may very well not be smooth, which would contradict most measures of it. As a practical matter, this would change our view of monetary policy dramatically, since many of the movements we see in GDP would be the result of the invisible hand, and therefore not something for policymakers to offset.