We argued in Chapter 21 that monetary policymakers must adhere to the Taylor principle in order for the inflation rate to be stable. We can use the aggregate demand and supply model to formally demonstrate this result by showing that if policymakers do not follow the Taylor principle, inflation will be unstable.

A central bank that does not follow the Taylor principle will fail to raise nominal interest rates by more than the increase in expected inflation. As a result, higher inflation will lead to a decline in real interest rates, as shown by the downward-sloping MP curve in panel (a) of Figure 1. As the real interest rate falls and we move from point A to point 1 to point B on the MP curve, equilibrium output rises from point A to point 1 to point B on the IS curve in panel (b) and on the AD curve in panel (c), with the result that the AD curve slopes upward.

Referring to panel (c), suppose the economy starts at point 1, at the intersection of the AD curve with the long-run aggregate supply curve LRAS and the short-run aggregate supply curve AS. Now suppose that a negative supply shock that raises prices causes the short-run aggregate supply curve to shift up to AS. The economy moves to point 2, where aggregate output has risen to Y and inflation has risen to π. Expected inflation now rises, and so the short-run aggregate supply curve shifts up to AS and the economy moves to point 3, where aggregate output at Y is further above potential output. This causes the short-run aggregate supply curve to rise further, sending the economy to point 4, with an even larger increase in output and inflation, to Y and π, respectively. The result is then an ever-accelerating inflation rate, which keeps on rising faster and faster, shooting off into the stratosphere.

By the same reasoning, if there is a negative price shock, inflation will just keep on falling, leading to ever-accelerating deflation.
FIGURE 1
Not Following the Taylor Principle Leads to Unstable Inflation

Not following the Taylor principle leads to a downward-sloping MP curve in panel (a). As inflation rises and we move from point A to point 1 to point B on the MP curve, the equilibrium output rises at points A, 1, and B on the IS curve in panel (b) and on the AD curve in panel (c). The AD curve is therefore upward-sloping. A positive price shock shifts the short-run aggregate supply curve up to AS₂, and the economy moves to point 2. Expected inflation now rises, and the short-run aggregate supply curve shifts up further, to AS₃, and the economy moves to point 3. The short-run aggregate supply curve shifts up even further to AS₄, and inflation keeps on rising at an accelerating pace, and so inflation is highly unstable.