In the previous chapters we discussed the Federal Reserve System; its origin and how it changes the money supply. Earlier still, we discussed fiscal policy, examining the effects of government spending, income taxation, and deficits. Our discussion of fiscal policy emphasized the long-run effects of government spending on infrastructure goods, the disincentives to work and save from higher income taxes, and the diversion of output from investment to consumption that a deficit may cause. Even our examples of temporary changes in government spending, wars and large public capital projects were motivated by long run goals. We fight wars to preserve our institutions of individual liberty, private property, and the like. Successful public capital projects promote economic activity for years to come. Our discussion of inflation also emphasized the long run. The policy possibilities discussed there were "x" % rules that sought to produce stable prices over the long haul. In this chapter we turn our attention to the short-run concerns of policy.

Real output fluctuates in the short run in response to shocks to aggregate demand and supply. Hikes in oil prices, bad weather, drops in investment demand, and other types of shocks as well reduce real output in the short run. If the shocks are large or numerous enough, the economy falls into recession. Policy that tries to offset the effects of temporary disturbances to real output is called stabilization policy. When should policy makers change taxes, spending or the money supply, and what problems do they face? These questions occupy us in this chapter.

We begin by describing in more detail what we mean by stabilization policy. We then ask whether or not stabilization improves welfare, and we find that sometimes it does and sometimes it doesn't. Unfortunately, even when stabilization policy can make things better, policy makers face serious practical problems in carrying out the policy. After we discuss these problems, some suggestions or guidelines that economists have made are described.
**Stabilization**

Figure 23.1 shows a hypothetical path of real output in the absence of any monetary or fiscal policy. Output shows the typical cyclical pattern, except we drew it nice and smooth. Now suppose that policy makers successfully implement stabilization policy.

The adverb successfully is important because, as we will discuss later, it is very hard to get stabilization policy right. But let us go on. Successful stabilization policy reduces the amplitude of the fluctuations in real output. It makes the path of real output more stable or smoother. The dashed line in Figure 23.1 shows the path of output when successful stabilization policy has been implemented.

When thinking about this type of policy we need to keep two questions in mind. First, is stabilization policy possible? We may not have enough information about, or understanding of, the economy to make the path of real output smoother. Second, given that it is possible, is stabilizing output a good idea? Does it make the households in the economy better off? This may seem clear in the case of a recession, but it is not. It turns out that in some situations it is a good idea, but in others it is not.

As is often the case, we have some potential confusion lurking behind measurement issues. If output were not growing over time, we could conduct our discussion just in terms of levels. For example, output might fall, and in response the Fed could increase the level of the money supply. However, output is growing overtime, so instead of output falling we may be concerned with it growing below its trend. This, in turn, may call for an increase in the rate of growth of the money supply, or the rate of growth in government spending. It is easier to talk and write in terms of levels. It takes less space to write and less time to say "output falls" than it takes to
write or say "output falls below its trend." We defer to the demands of time and space, and carry out our analysis in terms of levels. The lessons we learn extend to the case where total output grows over time.

We need to agree on some more terminology. By expansionary policy we mean policy designed to increase aggregate demand. Expansionary fiscal policy includes tax cuts and spending increases. Expansionary monetary policy means increases in the money supply. It is important to note that for monetary policy to have any hope of stabilizing output, money must not be neutral. For this reason we use the AD-AS model to study stabilization policy.

Policy Responses

The desirability of stabilization policy depends on the type of shock. To see why this is so, it is best to take each type of shock in turn. First, we study a supply shock, that is a shock to the production function. We then turn our attention to a demand shock. The section ends with a summary.

a. supply shocks

To make our analysis concrete let us fix on a specific shock, a temporary increase in the price of oil. Figure 23.2 shows the impact of this shock in the sticky wage AD-AS model. The AS curve shifts back and to the left since the cost of producing goods has increased. This causes the price level to rise from $P^\ast$ to $P^{**}$, and real output to fall from $Y^\ast$ to $Y^{**}$.

The Fed and Congress must now make decisions. Should they increase the money supply, cut taxes, or increase government spending? All of these actions shift the AD curve out
and to the right, and move income back toward its original level. An alternative is to be passive and let the economy adjust on its own.

Households in the economy are unhappy about the increase in the price of oil and they wish it would reverse itself. Will they be any happier if policy makers increase aggregate demand? The answer here is probably not. To see why, remember the reasons for the upward sloping AS curve. As you move up an AS curve the actual real wage that workers receive declines. In the present case, the real wage declines initially when oil prices rise, and of course workers are not happy about this turn of events. If policy makers increase aggregate demand, and hence cause another increase in the price level, real wages will take another tumble; this just adds to the despair.

There is a fundamental problem with stabilization policy in this situation. In the AD-AS model the AS curve slopes upward when the change in the price level is unexpected. Expansionary policy in response to a supply shock takes the price level farther from the level on which households based, or are basing, their actions. Suppose that the price level had been $P^*$ for a long time before the unexpected oil price shock, so all contracts and labor supply decisions were based on the expectation that prices would remain at $P^*$. The oil price shock takes the actual price level to $P''$. The unexpected increase in the price level can have two effects. First, it may lead to higher nominal wages that ill informed workers mistakenly interpret as higher real wages. Second, it alters labor contracts into which workers had entered by lowering the real wage. If policy makers increase aggregate demand, none of this is undone, and indeed matters are made worse. The price level moves even farther away from its expected level, further reducing contract real wages, and further misleading workers.

Expansionary policy in the face of an increase in the price of oil is unlikely to improve the situation. Higher oil prices, and the increased cost of production which they cause, are behind the fall in output; and expansionary policy does nothing to offset these higher costs. Instead, stabilization policy most likely aggravates the mischief done by higher oil prices by vitiating contracts or tricking workers.

b. demand shocks

Now we consider a demand shock. Again, to make things concrete we look at a specific example, an unexpected decrease in investment demand caused by a fall in the expected
profitability of investment projects. Figure 23.3 shows the effects of this shock. The AD curve shifts back and to the left, output falls from $Y^*$ to $Y^{**}$, and the price level falls from $P'$ to $P^{**}$.

Is expansionary policy called for in this case? To find out, we first must see why output fell. The decrease in aggregate demand reduced dollar spending on goods and services. Firms saw a decline in the demand and so lowered prices. For those firms with workers on nominal wage contracts the real wage rose and layoffs occurred. Other firms offered lower nominal wages to their workers, but ill informed workers interpreted these offers as offers of lower real wages and quit. Employment and output fell.

The recession occurs in this case because the changing price level tricks workers, or leaves them in contracts that they would prefer to renegotiate. It is critical to note that there has been no shift in the production function, no increase in the cost of producing goods. Output falls because the price level falls below its expected level. There is a role for expansionary policy here. Expansionary policy, fiscal or monetary, shifts the AD curve back toward its original position. This raises the price level back toward its original level and reduces the damage done in the labor market by its unexpected fall. In this case expansionary policy can undo the effects of the shock. This increases welfare.

c. summary

Stabilizing monetary and fiscal policy can improve welfare. However, there is an important qualification. Policy makers should fight recessions caused by unexpected shifts in aggregate
demand, but not recessions caused by unexpected shocks to aggregate supply. Shocks to aggregate demand may arise from decreases in investment demand, increases in the demand for money, unexpected declines in government spending, or, if we opened the economy to trade, shocks to import demand. Supply shocks may arise from oil price shocks, spells of bad weather, structural shifts in the economy, and so on. Because the economy is vulnerable to a variety of shocks and the appropriate response depends on the kind of shock, no simple prescription will do.

Some Practical Problems

To say it is possible for stabilization policy to be desirable is different from advocating its use. Policy makers face many daunting problems in the implementation of policy. Many economists believe that these practical difficulties in carrying out policy make successful stabilization unlikely. We discuss these problems now.

a. what kind of shock is it?

To set welfare improving policy, the policy maker must first identify the type of shock. Sometimes this is easy. OPEC announces its policy and policy makers observe the price of oil change. Bad weather and natural disasters are not secrets. Other times identification is hard. For example, structural shifts may occur in subtle ways, difficult to see and measure at the time, or even afterward.

For the most part, we have taken our shocks one at a time. But, there is no reason for the real world to be so congenial. Recessions could arise from just plain bad luck. Oil prices may rise a bit, while several industries adjust to structural changes, and several weather catastrophes occur. In addition, aggregate demand shocks may arrive at the same time. Investment may fall off, if managers become more uncertain about the future, or the demand for money may rise. Each of these shocks may be small and hard to "see". On their own, they would not cause a recession, but together they might. When several small shocks conspire to start a recession, it may be hard to diagnose at the time.
b. quantitative uncertainty

Suppose we overcome the identification problem. For example, suppose that the economists who advise policy makers and the policy makers agree that a significant demand shock has occurred. The next question is by how much to change the money supply, taxes, or government spending. If it is hard to identify a shock, it is that much harder to gauge its strength and to calculate the appropriate dose of policy. Policy makers want to shift the AD curve out and to the right, but they don't want to go too far. Too strong a response will cause prices to rise beyond their pre-shock level and lower actual real wages. Policy makers want to avoid this outcome.

c. lags

Up to now we have kept time out of the discussion. Everything happens all at once. But, time does not stand still for policy makers. On the contrary, conducting timely policy changes may be the most difficult problem of all.

Information on the state of the economy arrives only with a lag. All the measures of economic activity move around considerably from month to month and, as we know, none of the measures is perfect. To conclude that the economy has turned toward recession, usually requires several months or quarters of data. Moreover, politics charge the public discussion. The party in the White House usually paints the prettiest possible picture. The opposition paints a bleak scene. In short, it can easily take six months or more until a consensus can be reached. The time between the onset of the recession and the time a policy consensus is reached is called the recognition lag.

Once consensus is reached the policy must be formulated. The nature and size of the shock must be assessed, and the policy response agreed upon. For monetary policy this can happen rather quickly since the policy is set by the 12-member FOMC. For fiscal policy consensus may never happen. To change taxes or government spending a majority of 435 members of the House of Representatives must be achieved, and it must then pass the Senate. If the legislation leaps these hurdles, it must still be signed by the president. Each member of Congress wants the policy to benefit his constituents and to embarrass his opponent's. In the spring of 1993 a
stimulus package died in the Senate from a filibuster. This package was meant to address a recession that had officially ended two years earlier. The lag between the time consensus is reached and the time policy is implemented is called the implementation or inside lag.

Finally, once the policy is implemented it takes some time for the economy to react. In the case of monetary policy, the Fed must buy government securities, banks must increase their lending, and households their spending. For fiscal policy the new spending must take place or taxcuts must generate spending. Several months or more may pass before the economy feels a significant impact from monetary or fiscal expansion. The lag between the time the policy is implemented and the time the economy reacts to the policy is called the impact or outside lag.

If we add up all the lags, as we do in Figure 23.4, more than a year can pass after a recession begins before the economy feels the effect of the policy. The average recession in the U.S. lasts a little less than a year. This means that the economy is likely to be out of the recession before the policy meant to treat it kicks in. The expansionary policy hits the economy when the economy is already expanding. In this sense, stabilization policy can become destabilizing.

**What Is A Policy Maker To Do?**

Many economists are skeptical of the ability of policy makers to stabilize output because of the lags and the other practical problems. But, there are various degrees of skepticism. Many suggestions on how to conduct policy have been made and we will describe several.
Some economists, Milton Friedman the most famous among them, worry about the destabilizing potential of Fed policy. Friedman and Anna Schwartz pioneered the study of U.S. monetary history. Their analysis suggested to them that in its decisions on stabilization policy the Fed is more often wrong than right, and stabilization policy end up making real output more volatile. They point to the Great Depression as the Fed's most tragic error. Friedman and Schwartz recommend that the Fed choose a reasonable rate of growth for the money supply, and stick to it. This is the origin of the 3% rule that we discussed earlier.

Other economists would allow more flexibility. They would recommend that the Fed follow a 3% in general, but be prepared to respond to large observable shocks, for example the stock market crash in 1987. In October 1987 stock prices fell precipitously. The Fed immediately announced that it would supply whatever credit was needed to weather the storm; that is, it would increase the money supply by whatever amount necessary to satisfy credit markets. Some of these economists would endorse cautious countercyclical policy. If it is clear that the economy is in recession or a period of slow growth, these economist would prescribe mild expansionary policy.

An alternative to the constant, or at least very stable, money growth rule is a policy to stabilize the price level. There are costs to inflation even if the inflation is anticipated. To avoid these costs the Fed could keep inflation near or at zero by adjusting the money growth rate. This rule is very close to the stable money growth rule, especially if velocity and real growth don't change much. However, it is very hazardous in the face of supply shocks. An adverse supply shock increases the price level and this policy would indicate a reduction in the money supply; this would lower output even further.

A more active policy that avoids this pitfall would seek to stabilize nominal GDP or nominal GDP growth. This attempts to get around the problem of identifying the type of shock. For example, suppose there is negative shock to aggregate demand. Since both the price level and real output fall, so must nominal GDP. The above rule calls for expansionary policy, which is appropriate in this case. On the other hand, if there is a negative supply shock, the price level rises, but real output falls. Nominal GDP may rise or fall, or, and we hope this is the normal
case, not change at all. If there is no, or at least little, change in nominal GDP, again the rule gives the correct answer. Do not engage in stabilization policy.

b. fiscal policy

An early suggestion for fiscal policy was to balance the budget over the business cycle. When a recession occurred spending would increase, taxes would be cut, and a deficit would be run. In the midst of a boom, the reverse policy would be put into effect, a surplus would be run, and the debt accumulated during the recession paid off. This suggestion has fallen out of favor for many economists. First, it will not be welfare improving to increase aggregate demand if the recession has been caused by a supply shock. Second, lags plague fiscal policy. Finally, many analysts believe that politicians would be more than willing to increase spending and lower taxes during downturns, but, especially given our recent experience, would fail to cut spending and increase taxes during an expansion.

A proposal that returns regularly for congressional consideration is a balanced budget amendment. It seeks to take discretion out of the hands of Congress. In its simplest form such an amendment would require the federal government to match expenditures with receipts each year. Proponents of this idea want to impose some discipline on the spending and taxing habits of the federal government. Opponents observe that a legal requirement to balance the budget may very well be destabilizing. A downturn in the economy automatically moves the federal budget towards deficit. Tax collections fall as income, wages, and profits fall. Expenditures rise as more households are eligible for income support programs. To keep the budget balanced, would require a tax increase or a cut in spending at a time when the economy is in a recession. Both of these measures would further reduce income and raise hardships. Also, there are times when the government's demands for resources are unusually high, such as times of war or natural disasters. During these times, temporary deficits would avoid the need for temporary changes in tax rates that would be time consuming to pass and distort incentives. More sophisticated versions of the balanced budget amendment would allow some flexibility. For example, a deficit would be allowed if, say, 60% of the House and Senate agreed.

Other criticisms of a balanced budget amendment hinge on its enforcibility. It would be difficult to write an amendment that would identify everything that could count as spending and
everything that could count as revenue. For example, some expenditures may be taken "off budget," as has been proposed for Social Security, and not counted as expenditures for purposes of calculating the deficit.

Many economists favor balancing the high-employment budget. This would allow the so-called automatic stabilizers to work, but, if adhered to, discipline the budget process. Some argue against this principle because it would prohibit fiscal policy from playing an active role in output stabilization. For example, it would prohibit short-term stimulus spending to offset recessions. Others note that it is also unenforceable since there is no agreed upon method to calculate the high-employment deficit and so it may be subject to manipulation.

Extension

conflicts, credibility, and inflation

A conflict may arise between monetary policy makers and the public. Suppose that policy makers believe the long run or natural rate of unemployment is too high, perhaps because of generous unemployment insurance and other income support programs. In this case policy makers have an incentive to lower the unemployment rate by causing prices to rise faster than households expect. Remember, only unexpected changes in the money supply or money growth rate can change output or unemployment from its long run or natural level (if this is unclear, review the discussion of the short run aggregate supply curve or the Phillips curve). Households who are "tricked" into working harder than they otherwise would and households locked into unfavorable nominal wage contracts will not appreciate any decline in the unemployment rate brought about by unexpectedly high inflation. This produces a conflict between the interests of the policy makers and the interests of individual households.

To study the consequences of this conflict, suppose the policy makers have only two choices. They can set money growth to obtain zero inflation or they can set money growth to produce a moderate inflation. We also restrict our consideration to two possible outcomes for the unemployment rate. It may hit its natural rate or fall below it. These possibilities are summarized in Table 23.1.
Of the possible outcomes, the public prefers number 4. They prefer zero inflation, and, since unemployment is at its natural level, their decisions are based on accurate information. The worst possibility is number 1. Inflation is greater than zero and it must be unexpected since unemployment falls below its natural rate.

The Fed is willing to suffer inflation to lower the unemployment rate because it feels that the natural rate is too high. This means that outcomes 1 and 2 are its top choices, and 2 is preferred to 1 because it has zero inflation. However, the only way to obtain number 2 is for households to expect deflation. Unfortunately, actual inflation will be positive or zero and households would be foolish to expect deflation, and so there is no hope of getting number 2. If the economy settles at its natural rate of unemployment, the Fed would rather have zero inflation than a moderate inflation, and so it prefers number 4 relative to number 3. These preferences are summarized in Table 23.2.

Table 23.2 Preferences of the Fed and Households (ranked from best to worst)

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Now suppose that the public, or the average household, expects zero inflation and the Fed knows this information. The Fed will be tempted to produce a moderate inflation. For if it does,
the unemployment rate will fall below the natural rate and the Fed's favorite feasible outcome, number 1, will occur. However, if the Fed gives in to this temptation, the change will only be temporary. As expectations adjust, the economy will move to outcome 4, a moderate inflation with the economy at its natural rate of unemployment.

Once the economy finds itself in outcome number 4, it will be hard to change. If the Fed decides to return to zero inflation, it is likely to produce some unemployment during the transition. This is because the reduction in inflation is likely to be unexpected or the public is unlikely to believe the Fed's plan to maintain zero inflation. To avoid the adjustment cost to zero inflation, the Fed may be willing to tolerate a moderate inflation.

The only way to avoid the adjustment cost is for the Fed to make a credible commitment to zero inflation. This is difficult, especially after an earlier commitment has been broken. In the absence of a believable promise on the part of the monetary authority, the economy will experience a moderate inflation and hover about the natural rate of unemployment. This has been the U.S. experience and that of many other countries in the post World War II era.

Summary

Monetary and fiscal policy may be used to stabilize fluctuations in real output. When output falls expansionary policy can increase aggregate demand and return output to its former level. The desirability of stabilization policy depends on the source of the shock to the economy. A demand shock may call for a response, but active stabilization policies in the face of a supply shock are likely to lower welfare. There are many practical problems faced by policy makers trying to implement policies. Perhaps the worst of these problems are long lags that make timely policy very difficult.
Review Questions

1) To which of the following shocks should the Fed respond with stabilization policy
   a) a very cold and snowy winter
   b) the spread of credit cards which reduces transactions costs
   c) a wave of pessimism that reduces investment spending
   d) a decrease in defense industries and an increase in other industries brought about by
      the end of the cold war

2) Explain carefully why workers will be upset if the Fed tries to offset a temporary increase
   in the price of oil by increasing the money supply.

3) Heard on the street: "By the time anyone gets around to doing something, it's too late."
   How does this statement apply to policy making?

4) After World War II countries maintained a fiat money. The supply of fiat money is at the
   discretion of the monetary authority. During the post-war period countries across the world
   have experienced sustained inflations. Give an explanation of these inflations.

5) An alternative proposal to the balanced budget amendment is a spending limitation amend-
   ment. Do the criticisms of the balanced budget amendment apply with equal force to this
   proposal? Explain.