

Lecture 4: Monetary Policy Using The AD/IA Model

I. OVERVIEW

- In the last lecture, we looked at how changes in fiscal and monetary policy, as well as other economic changes affect the economy individually.
- In today's lecture we look at how monetary policy decisions interact with other economic changes: basically we want to use our model to understand how the monetary policy maker should pick the appropriate policy for a given change in the economy.
- By examining the policy options available in a variety of situations, you will hopefully develop a good intuitive understanding of what monetary policy makers have to do in order to ensure macroeconomic stability.

II. MODELING THE BEHAVIOR OF THE FEDERAL RESERVE

- We will first describe two key features of the Federal Reserve - its long-term perspective of the economy and its independence from political influence. Having established these two core features, we can then use the AD/IA model to see how the Fed should react to various changes in the economy.

Long Time Horizon

- Governments, facing elections every 2-6 years are often tempted to implement policy changes that benefit the economy in the short run but have little or no impact on output in the long run.
- On the contrary, the Board of Governors consists of 7 members appointed by the President to 14 YEAR terms. A Chairman is selected by the president to a 4 year term from among the Board of Governors.
- The Federal Reserve System consists of the Federal Reserve Board and 12 regional Federal Reserve banks. These banks, set up by the Federal Reserve act of 1913, are located in Boston, New York, Philadelphia, Richmond, Atlanta, Cleveland, St. Louis, Kansas City, Chicago, Minneapolis, Dallas and San Francisco.
- The seven members of the Board of Governors, the President of the New York Fed and four other presidents of the regional Feds who serve rolling 1 year terms. The Open Market Committee is therefore very likely to take a long-term perspective on the health of the economy.

Independence

- Economists also attach great importance to the degree of independence granted to the central bank in a country by the government. The degree of freedom given to the central bank varies widely across countries: but the U.S and the EMU are recognized to have very independent central banks.

- In the U.S., the governor of the Federal Reserve is appointed to terms that span multiple presidents to preserve independence. In general, the likelihood that a president would replace the current chairman of the Federal Reserve is remote. Some call Alan Greenspan “the most powerful man in the world”.
- Economists believe that greater central bank independence leads to better economic performance by allowing the Central Bank to focus on the long run and by disassociating the central bank from having to continually worry about the short-term benefits to the economy.

III. MONETARY POLICY IN A RECESSION

A Demand Shock

- First we will look at the appropriate response to a shock that causes a recession in the economy. An example would be a stock market crash: an event that would reduce consumer confidence and move the AD curve in.
- If the Fed does nothing then output will fall below potential output and inflation will fall over time. As inflation falls, the Fed will lower interest rates and output will increase back to Y^* . This is shown in Figure 1.
- If the Fed does not want the economy to undergo a short-term recession and a period of disinflation, then they can instead lower interest rates today and shift the AD curve back to Y^* . This is shown in Figure 2.

Figure 1

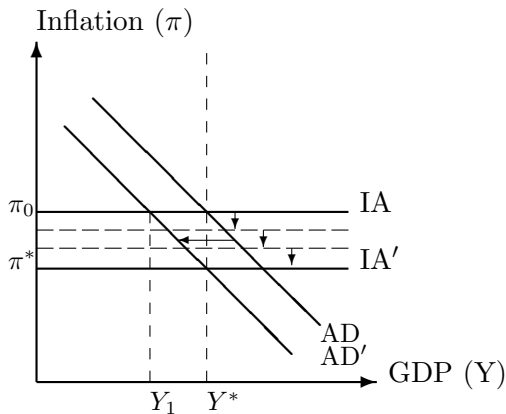
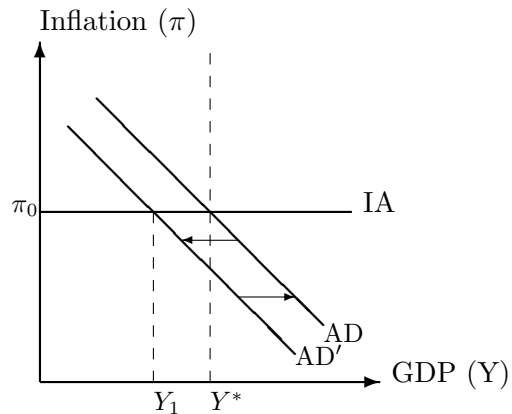


Figure 2



- Why would the Fed be willing to lower interest rates today? Consider the difference between Figure 1 and Figure 2. In terms of output, both policies will leave the economy at Y^* in the long run. In the short run of course, lowering interest rates today seems better because we were able to avoid a short run recession.
- In terms of inflation, both policies will leave inflation unchanged in the short run. In the long run, lowering interest rates today leaves the economy with a higher rate of inflation.

- If we assume that the Fed has a long term horizon then it should not lower rates today because that will not affect Y in the long run and leave the economy with a higher rate of inflation. But the Fed also likes stability so it may lower interest rates today and keep inflation stable.
- So either response, lowering interest rates today, or waiting till inflation actually falls and then following their policy rule could be a possible response in this scenario. The option the Fed chooses may well depend on the current level of inflation in the economy.
- If the current inflation level is high, they may prefer the economy return to Y^* with a lower rate of inflation. If inflation is currently low, the Fed may opt for stability and lower rates to keep inflation and output stable.

An Oil Price Shock

- Next we will look at a recession induced by a sudden rise in the price of oil. Recall that a sudden rise in the price of oil will cause prices across the entire economy to rise.
- In terms of our model, the IA line will shift up even in the short run causing a recession and high inflation to occur in the economy.
- This is similar to the oil price shocks of the early 70s and the late 70s. The term that economists often use to describe this type of scenario is “stagflation”: a stagnant economy coupled with high inflation.
- If the Fed (and the government) does nothing then output will fall below potential output and inflation will fall over time. As inflation falls, the Fed will lower interest rates and output will increase back to Y^* . This is shown in Figure 1.
- If the Fed does not want the economy to undergo a short-term recession and a period of disinflation, then they can instead lower interest rates today and shift the AD curve back to Y^* . This is shown in Figure 2.
- So the Fed has a tradeoff to make here: tolerate a recession and allow inflation to fall over time and then facilitate the recovery by lowering interest rates in response to the fall in inflation. Or avoid a recession by lowering interest rates today and tolerate the new, higher level of inflation brought about by the rise in the price of oil.
- So the Fed can avoid a recession or avoid higher inflation, but not both, when the economy is hit by an increase in the price of oil.

Figure 1

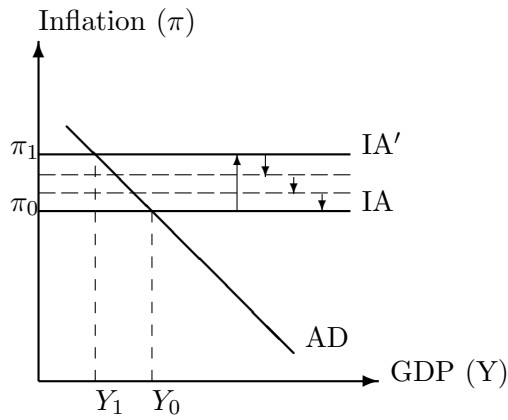
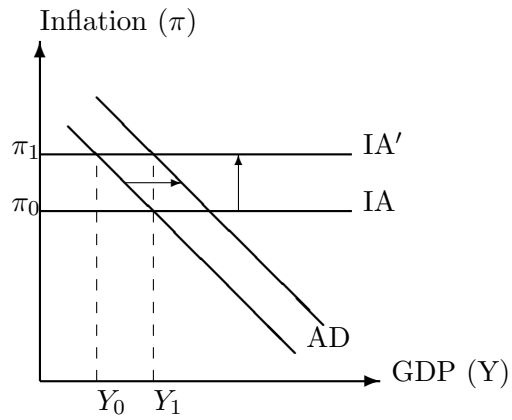


Figure 2



IV. MONETARY POLICY IN A BOOM

- The next task is to decide how the Fed should choose the most appropriate monetary policy response to a given change in fiscal policy that causes an economic boom.

Case 1: An Increase in Government Spending (Y^* is unaffected)

- We first study the case of an increase in government purchases that leaves Y^* unaffected. The increase in government purchases shifts the AD curve out. This will increase output and leave inflation unchanged in the short run.
- The long-term impact is to raise inflation and leave output unchanged. [See Figure 1]. The Fed, with its long-term outlook, does not like this change in the economy. It will respond to this spending policy by raising interest rates today. This will shift the AD curve in and move the economy back to Y^* [See Figure 2].

Figure 1

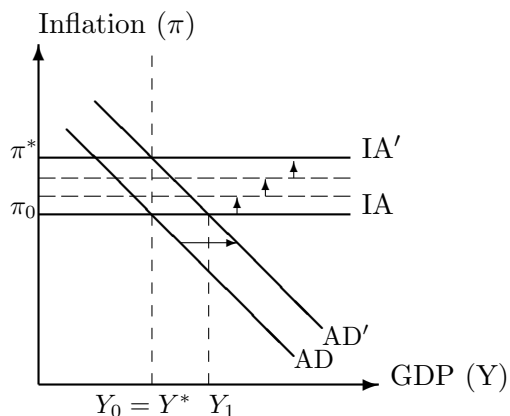
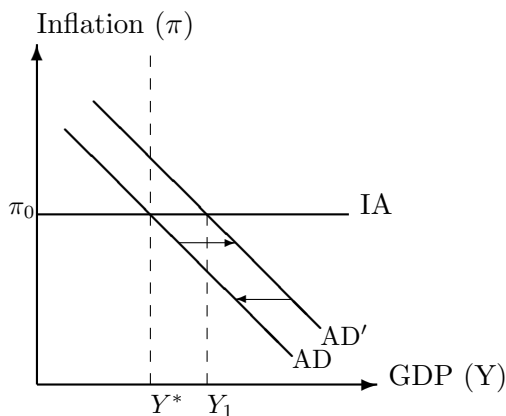


Figure 2



Case 2: An Increase in Government Spending (Y^* is affected)

- Now consider the case of an increase in government purchases that increases Y^* as well. The increase in G shifts the AD curve out. This will increase output and leave inflation unchanged in the short run. The long-term impact is different: there is a smaller increase in inflation and output is now higher than before. [See Figure 1].
- Once again, if the Fed does not like this change in the economy then it can raise interest rates again but not by as much as before because spending does not need to be cooled off as much in order to shift the AD curve in and move the economy back to Y^* .

Figure 1

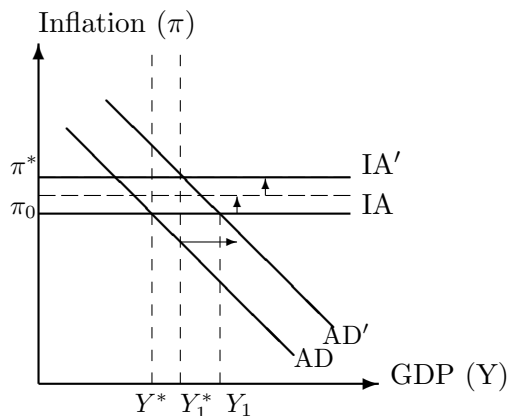
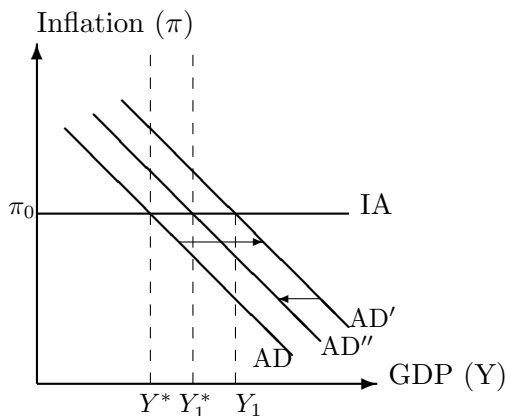


Figure 2



VI. THE IMPORTANCE OF Y^* FOR MONETARY POLICYMAKERS

- The task of the Fed in a boom can be seen as trying to move the economy to the new potential output level by changing interest rates so as to move the economy immediately to Y^* .

- The task of the Fed in a recession can also be seen as trying to move the economy back to potential output although it is possible that the Fed may be willing to tolerate a recession and let inflation fall if the current level of inflation is too high.
- So Y^* takes on a pivotal role: in general we think of the Federal Reserve as preferring a stable economy. Since the Fed does not like periods of fluctuations in prices and output, the Fed's goal is to keep the economy as close to a sustainable level of output as possible. Essentially this means staying as close to Y^* as possible so that prices and output do not fluctuate very much.
- We can see that predicting the impact of economic changes on Y^* remains an important part of the Fed's job description. What policy the Fed decides to follow is critically dependent upon what is happening to Y^* . This is often the primary reason behind disgruntlement with the Fed during booms: some people believe $Y > Y^*$ and therefore the Fed should raise rates, while others believe that Y^* has increased as well so there is little need for the Fed to raise rates.
- When an increase in output is a result of increases in technology, more public investment, education, job training programs etc. the Fed should be less inclined to raise interest rates today and move the economy back. On the other hand, if the increase in output comes from a bubble in the stock market that does not affect the economy's ability to produce in the long run, the Fed should be more inclined to raise interest rates and move the economy back.

Can Policy Affect Y^* ?

- In reality, what type of changes in fiscal or monetary policy affect the level of potential output?
- Potential output is the economy's long run ability to produce goods and services: can increase only if the productive capacity of the economy increased, therefore labor, technology or capital has to increase as a consequence of the expansionary fiscal policy.
- Possible candidates are increased spending on research and development, establishing a system of property rights, on public infrastructure or on job training programs that reduce the time spent between jobs etc.
- Economists generally think about the impact of monetary policy on Y^* with more certainty. They assume that monetary policy cannot affect the economy's long run ability to produce.

VII. EXTENSIONS AND COMPLICATIONS

- The AD/IA model we developed over the last few classes and the analysis we have done has given us a nice overview of monetary policy.
- However, you should keep in mind that this analysis masks several subtle issues, which are very important for monetary policy in practice.
- These issues will be explored in the next few classes.
 1. The Role of Expectations: expected inflation determines where the IA curve lies. We need to have a better understanding of how expectations affect (and are affected by) monetary policy.

2. Lags and Impact: in drawing AD/IA diagrams we assumed that the policymaker can adjust interest rates in either direction to move the economy where it wants to go. However, this is by no means something we can take for granted. In a 10 trillion dollar economy can changing one inter-bank interest rate really move output? Even if it does, how do policy changes get transmitted to the economy? What happens when one of these channels gets shut off, as happened with the zero interest rate situation in Japan. How long does it take for these effects to be transmitted to the economy? What complications are caused by these lags in impact?
3. Independence and Reputation: how would the above analysis change if the Central Bank was not independent from the government? How does the reputation of the central banker affect the analysis? Does it matter if the central banker is known to be an “inflation-hawk” vs. if she is known to be an “inflation-dove”?
4. Uncertainty: how do we cope with the fact that the Central Banker may not know where Y^* is? How about the fact that the central banker does not know what GDP or inflation is contemporaneously.
5. Open Economy: how do we change our analysis to deal with countries that are small and open, where inflows and outflows of money matter?