Fall Semester '01-'02
Akila Weerapana

Lecture 13: The Aggregate Demand Curve

I. OVERVIEW

- According to the Keynesian Cross model, the government can have a magnified impact on the economy by increasing purchases; in reality however government purchases are not a guaranteed way to raise GDP. To better understand the real world we need to use a richer model that describes how the economy behaves.

- The model we use will be called the Aggregate Demand/Price Adjustment model, it builds on the concepts of the Keynesian cross model but is much more useful for analyzing policy decisions. This model has two components: an Aggregate Demand curve and a Price Adjustment line. Today we will look at the Aggregate Demand curve and in the next lecture study the Price Adjustment line.

II. THE RELATIONSHIP BETWEEN GDP AND THE INTEREST RATE

- The Aggregate Demand curve describes a relationship between GDP and inflation. We derive the relationship in two steps, first the relationship between the interest rate and GDP and then the relationship between inflation and the interest rate.

- The first part of the relationship, between the interest rate and output, draws on a modified version of the Keynesian Cross model. It resembles the Keynesian Cross model in that increases in spending have a magnified impact on output through the multiplier. It differs from the Keynesian Cross in that it incorporates explicitly the relationship between the interest rate and GDP.

- **Consumption:**
    - As in the Keynesian Cross increases in consumer confidence and decreases in taxes are assumed to increase consumption and vice versa.

    - In addition, increases in interest rates are assumed to reduce consumption, albeit insignificantly, and vice versa. An increase in interest rates will reduce consumption by making it more attractive for some people to save but will make it more attractive for others (who have a lot of savings already) to consume.

- **Investment**
    - There is a negative relationship between interest rates and investment. Higher interest rates make it expensive to borrow and also increase the opportunity cost of using ones own funds.

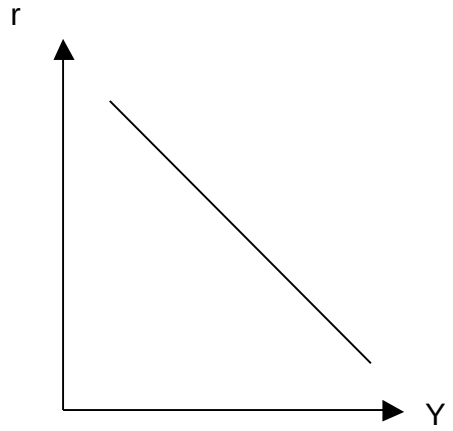
    - Investment will also change for reasons unrelated to interest rates. These other factors are what Keynes termed “animal spirits”: changes unrelated to r but due to investor confidence, for example.

- **Net Exports**
    - There is a negative relationship between interest rates and NX. Higher interest rates make it more attractive for foreigners to leave their money here, which in turn causes the currency to increase in value.

    - The rise in the value of the currency makes it cheaper to buy foreign goods and reduces NX.

    - NX can also change for other reasons: If foreigners develop a taste for domestic goods then NX can increase for example.

- So the end result is a negative relationship between r and Y working through the channels of C, I and NX.

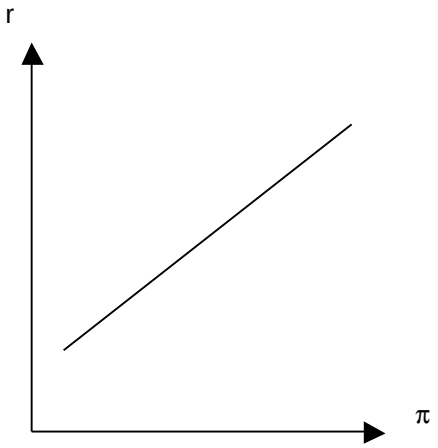


III. THE RELATIONSHIP BETWEEN INFLATION AND THE INTEREST RATE

- The second part of the Aggregate Demand curve is the relationship between inflation and the real interest rate. This relationship is based on the actions of the Federal Reserve, which typically responds to increases in inflation by raising the interest rate and to decreases in inflation by lowering interest rates.

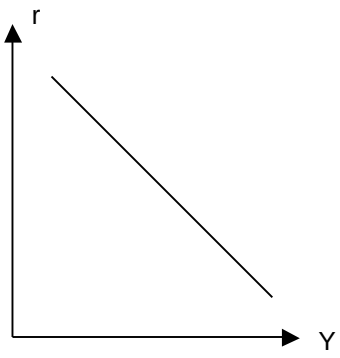
- This relationship between inflation and the interest rate can be summarized by what's called a monetary policy rule: the interest rate can be expressed as a systematic function of the rate of inflation. The relationship can be described graphically as follows.

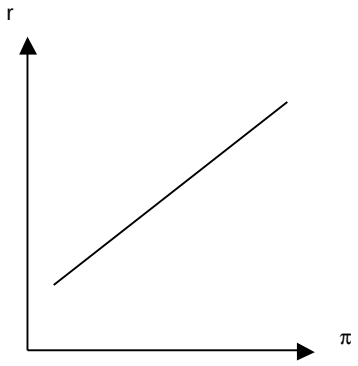
- Note that, unlike the textbook, we have not made (and will not make) a distinction between real and nominal interest rates. What I have called "the interest rate" is the real interest rate in the economy. The subsequent analysis differs slightly from the textbook, which presents the monetary policy rule in terms of nominal interest rates.

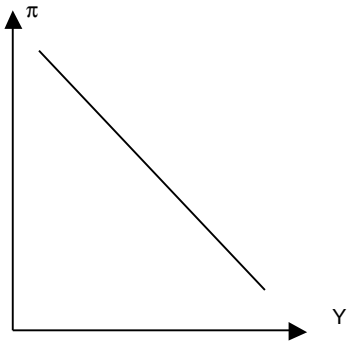


IV. THE AGGREGATE DEMAND CURVE

- We now have the two relationships: the negative relationship between GDP and the interest rate and the positive relationship between inflation and the interest rate. Combining these two relationships establishes a negative relationship between inflation and GDP.



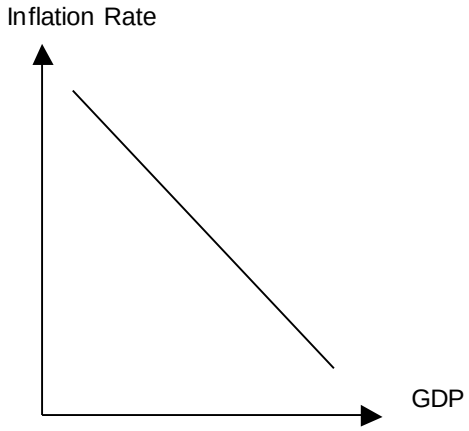




- When inflation is high, the Federal Reserve will raise interest rates in an attempt to lower inflation by slowing down GDP. The increase in interest rates will lower spending which in turn will reduce output through the multiplier effect. So an increase in inflation will reduce GDP.

- Conversely, when inflation is low, the Fed will lower interest rates. The resulting low interest rate will raise spending. The increase in spending will increase output through the multiplier effect. So a fall in inflation will increase GDP.

- So we will end up with a negative relationship between inflation and GDP, which we call the Aggregate Demand curve.



IV. WHAT CAUSES THE AD CURVE TO SHIFT

- Key: Changes in GDP brought about through changes in inflation are reflected as movements along the AD curve and not as shifts in the AD curve.

- What causes the AD curve to shift? Any increase in spending will increase output through the multiplier effect. This increase will occur regardless of the inflation rate in the economy, therefore it will cause the AD curve to shift out.

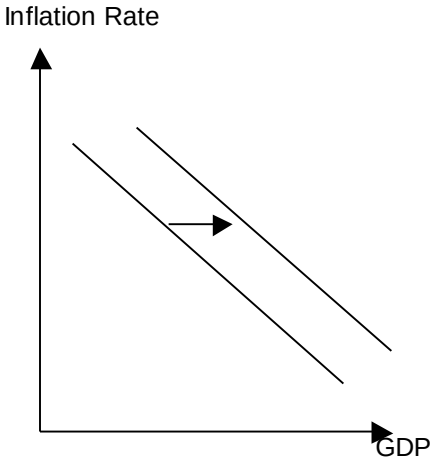
- So the AD curve will shift out for any of the following reasons.
    1) An increase in government purchases (G) or a reduction in taxes (T)
    2) An increase in consumer confidence
    3) An increase in investor confidence.
    4) Foreigners develop a taste for U.S goods or U.S. residents lose their taste for foreign goods.

- Conversely, any decrease in spending will decrease output through the multiplier effect at every level of inflation. So the AD curve will shift inwards.

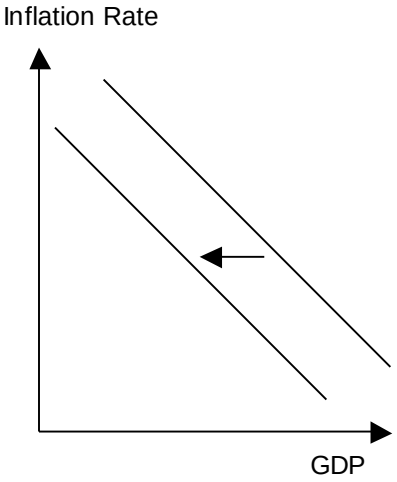
- So the AD curve will shift in for any of the following reasons.
    1) A decrease in government purchases (G) or an increase in taxes (T)
    2) A decrease in consumer confidence
    3) A decrease in investor confidence.
    4) Foreigners lose their taste for U.S goods or U.S. residents develop a taste for foreign goods.

- Monetary policy changes by the Federal Reserve also affect the AD curve. If the Fed changes interest rates IN RESPONSE to changes in inflation, that will be a movement along the AD curve rather than a shift in the AD curve. However, sometimes the Fed will change interest rates WITHOUT any change in current inflation (to ward off future inflation, for example). Such decisions will shift the AD curve.

- So a decision to lower interest rates today WITHOUT a change in inflation (**expansionary monetary policy**) will raise spending and shift the AD curve out. A decision to raise interest rates WITHOUT a change in inflation (**contractionary monetary policy**) will lower spending and shift the AD curve in.



EXPANSIONARY POLICY



CONTRACTIONARY POLICY

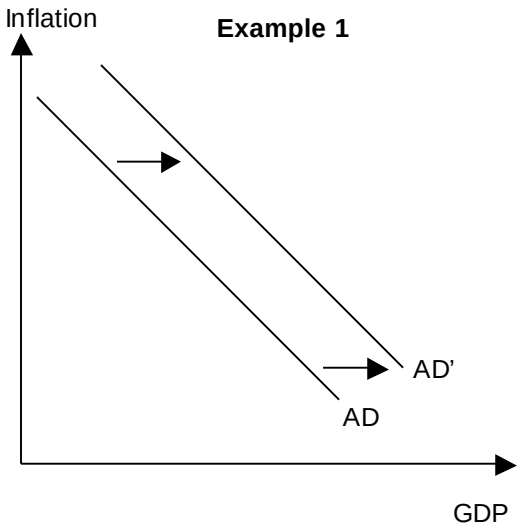
- Intuition: At the current rate of inflation, interest rates will be lower under expansionary policy. This fall in interest rates means that spending will be higher and therefore output will be higher as well. Conversely, contractionary policy will cause interest rates to rise at the existing level of inflation. The rise in interest rates will lower investment and reduce GDP. This is reflected as a shift in of the AD curve.

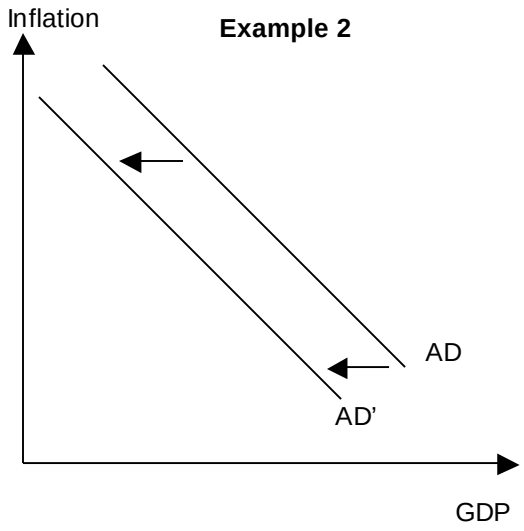
EXAMPLE 1: AN INCREASE IN GOVERNMENT PURCHASES

- An increase in *G* will cause GDP to increase at every level of inflation. This will cause the AD curve to shift out. The magnitude of the shift out is determined by the size of the multiplier.

EXAMPLE 2: A FALL IN INVESTOR CONFIDENCE

- Conversely, a decrease in investor confidence will cause GDP to decrease at every level of inflation. This will cause the AD curve to shift in; the magnitude of the shift is also determined by the size of the multiplier.


Inflation
Example 1
AD'
AD
GDP


Inflation
Example 2
AD
AD'
GDP