### Lecture 9: Introduction to Economic Fluctuations

(chapter 9)

#### 1) Definitions

**Business cycle**: short-run fluctuations in output and employment. Have **peaks and troughs**. Recessions are the sustained periods of declining output, troughs.

**“Stylized” facts** (basic observations about business cycles):

1) **Procyclical**: variables that rise when GDP rise.
   - True for employment, inflation, interest rate.
   - Note that the Real wage is only somewhat procyclical.

2) **Volatility**: if fluctuations are larger or smaller than fluctuations in output.
   - Some variables are **less** volatile than GDP: consumption (esp. nondurables)
   - Some variables are **more** volatile than GDP: investment (esp. inventories)

#### Long Run versus Short Run

The Neoclassical model in the previous chapters assumed the prices in all markets adjusted to make supply equal demand. This model was good at explaining the average level of variable like output and employment, but it could not explain the short-run fluctuations we observe in the world.

We will now draw a distinction between the short run and the long run in the economy. The main difference between is that **prices are assume not to be flexible in the short run; prices are flexible only in the long run**.

**Why would prices be sticky?**:

- **Menu costs**: print new price tags.
- **Long decision process** or take time to find info on whether should increase price or not for equilibrium
- **Contracts with customers**, wage contracts

**Evidence**:

1) researcher on buyer-seller pairings: average months before change price - 13 for steal cement, chemicals
2) Blinder survey of executives on pricing policies: most set only once a year.

**Implication**: one implication of this new assumption is that the classical dichotomy does not hold. If money supply is increased, not translate directly and completely into higher price; effect translate into increased output.

**Plan**: First consider a simple model that embodies these ideas. Then later consider a more detailed version.
2a) Aggregate Demand

**Def:** Aggregate demand, AD: relationship between quantity of output demanded and the aggregate price level.

Give simple derivation here, based on quantity theory of money. Will give more detailed derivation later.

Recall quantity theory of money:

\[ M \times V-bar = P \times Y, \]  
where velocity is some constant

We had previously assumed that \( Y \) was constant, and only \( P \) could move.

Now we assume \( Y \) can move.

For any particular money supply, there is a potential tradeoff between price level and output. If hold \( M \) constant, an increase in \( P \) implies fall in \( Y \).

Write: 
\[ P = (M-bar \times V-bar) \times \left( \frac{1}{Y} \right) \]

Intuition for why the AD curve slopes down:

Because assumed velocity fixed, each dollar can only be used for certain number of transactions.
And with certain amount of dollars, are only so many dollars worth of purchases that can be made.
If price rises, need more dollars for each unit of output, so only fewer units of goods can be bought.

b) Curve shows us possible combinations of \( P \) and \( Y \), for a given \( M \) and \( V \).

If \( M \) underlying the curve changes, then the set of possible combinations of \( P \) and \( Y \) will change. That means curve will shift.

Consider if Fed cuts Money supply in half. Then:
\[ P = (\frac{1}{2} \times M-bar \times V-bar) \times \left( \frac{1}{Y} \right) \]

So for \( P \) corresponding to a given \( Y \), the new \( P \) for that \( Y \) will be half as high. AD curve moves down, or say AD curve moves left.
If true if velocity decreases. Shifts AD shifts left, just like fall in the supply of money.

Will see in next chapter many reasons why AD might shift.

3a) Aggregate Supply

Note that by itself, AD not tell us Equilibrium P and Y, but a set of possible combinations.

If had a second relationship between the two variables along with AD, could pin down particular values of each. Want an aggregate supply curve.

Def Aggregate supply, AS : relationship between the quantity of goods supplied and the aggregate price level.

Distinction long run and short run matters here:

b) Long run:

Take from Neoclassical model: output determined by amounts of labor and capital, exist in a certain quantity and are assumed to be fully utilized.

\[ Y = F(K_{\text{bar}}, L_{\text{bar}}) = Y_{\text{bar}} \]

Says aggregate supply of goods not depend on price level. Is vertical line.

Draw it.

Combine with AD curve. Equilibrium is intersection.

Shift AD - halve money supply. New intersection at B. No change in output. Change price down, by half.

See classical dichotomy applies. Solve for equilibrium Y and W and employment.

Unemployment will be at the natural rate. Say output is at natural level (sometimes call this full-employment level).
c) Short run: Prices fixed.

In short run prices not adjusts. Assume extreme case, where prices are absolutely fixed at predetermined level.

Say J Crewprints catalogue, where sets price of items. Is committed to producing and selling however many people want to buy at that price. If lots of people want to buy, will produce more. Might change price next year, but not in short run.

How draw condition: set price constant: horizontal line.
Consider shift left in AD curve: fall in money supply. Makes output fall. People have less money. Can make fewer transactions, so buy less. J Crew unable to change price so produce less.

d) Transition from short run to long run:

But this is only in short run. Next year or season new catalogue comes out with new prices.

Distinguish Long run: LRAS is vertical from short run: SRAS is flat
4) Stabilization policy

Fluctuations in economy come from:
shocks: exogenous changes in aggregate demand or supply

Stabilization Policy: public actions aimed at keeping output and employment at their natural rates. Monetary and fiscal policies.

a) Shock to Aggregate demand

Consider a fall in velocity. Shirts AD left. This would make output fall under sticky prices. This would be a recession.
Monetary policy can undo the effect of this: increase money supply to shift AD curve to where it was before. The policy can prevent the recession.

Example: Consider financial panic in 1929. People take their money out of the bank and stuff their mattresses with it. The money supply is not circulating as fast, velocity falls. Federal Reserve should respond to this by increasing the supply of money.
b) Shocks to Aggregate Supply

Supply shock: exogenous change in the aggregate supply relationship defined. Something alters cost of producing goods, hence affect prices they charge.

Examples:
- Draught destroys crops, raises food prices
- New environmental laws add costs to production, passed on to consumers
- Increased unionization pushes up wages
- Creation of international oil cartel, curtail competition and raise prices

Graph as a shift up in the SRAS (assuming is a temporary shock, if permanent, would affect LRAS)

Effect: Stagflation: fall in output below natural rate and inflation at same time.

Tough policy choice:
1) Do nothing: endure lower output and inflation in short run. Eventually go to LRAS, price level fall and output restored. 1 - 2 - 1

2) Increase AD by raising money supply. Not get fall in output in short run. But in long run, will keep higher price level.

Example:
- Opec coordinated a reduction of oil supply and nearly doubled price of oil
- Oil price rise in 1973-74 and in 79-80. Both years it raised inflation to double digits and increased unemployment. (Was 4.9% in 1973, up to 8.5% by 1975. Up to 9.5% by 1982. Created stagflation.)
- Oil price cut in half in 1986, inflation among lowest in US history, and unemployment rate decline.