Keynesian Business Cycles & Policy

Chapter 11 (continued)
1. Keynesian Business Cycles

2. Role for Monetary and Fiscal Policies

3. Government Budget Deficits and Debt
1 Keynesian Business Cycles

1.1 Demand Shocks

- Stock market crash
  - Consumer wealth lower so consumption lower
  - Tobin’s Q lower, so investment lower
  - IS-LM-FE graph, IS curve shifts down, and equilibrium output is below full employment - recession
  - SRAS, LRAS, AD graph, AD shifts down and output is below LRAS
– Since output is lower, labor demand is lower

– Efficiency wage is lower if workers are more concerned about layoffs in recession

– Over time the price level will fall, shifting LM right and SRAS down until reach FE again

– Employment and real wage both rise back to FE levels
• Government cuts taxes (lump-sum taxes on households) and about half of the population is liquidity-constrained

  – Consumption increases

  – IS-LM-FE graph, IS curve shifts up, and equilibrium output is above full employment.- expansion or boom

  – SRAS, LRAS, AD graph, AD shifts up and output is above LRAS

  – Since output is higher, labor demand is higher

  – The efficiency wage is higher if workers are less concerned about layoffs in booms

  – Over time the price level will rise, shifting LM left and SRAS upon until reach FE again
– Employment and the real wage both fall back to FE levels
• Money supply increases
  – LM curve shifts right and equilibrium output is above FE
  – AD curve shifts right and equilibrium output is above FE
  – Higher output implies higher labor demand raising employment
  – Efficiency wage rises if workers are less concerned about layoffs during booms
  – Over time the price level rises, shifting SRAS up and LM down to restore output to FE
1.2 Business Cycle Facts and Demand Shocks

- Aggregates like consumption, investment, employment are pro-cyclical

- Employment and real wages are pro-cyclical

- Money-growth can lead the business cycle

- Inflation is pro-cyclical

- Labor-productivity is counter-cyclical - contrary to data - consider capacity utilization and labor hoarding to make this consistent with the data
1.3 Supply Shocks

- Increase in the price of imported oil - A in production function falls

- Fall in A reduces FE output

- Prices rise because desired price is far from current price, shifting SRAS up and LM down

- Equilibrium output falls - how far?

- Long-run effect depends on whether the shock was permanent or not.
• Analysis with supply shocks looks more like RBC models - prices are not as sticky here

2 Role for Monetary and Fiscal Policy

• Recession caused by fall in demand
  – Involuntary unemployment
  – Expansionary policy can reduce the unemployment, returning output to its long-run equilibrium faster
  – Costs
* prices will not fall

* if fiscal policy, interest rate rises, crowding out investment with implications for future output

* if fiscal policy, new debt has future consequences

- Expansion caused by a rise in demand

- Recession caused by a negative technology (supply) shock

- Expansion caused by a positive supply shock

- Can expansionary policy raise growth?
3 Government Budget Deficits and Debt

- Real debt \( (B_t) \) grows as the government government pays interest on old debt and finances a primary deficit \( (G - T > 0) \)

\[
B_t - B_{t-1} = rB_{t-1} + G_t - T_t
\]

- How can the government make debt stop growing?

\[
T_t - G_t = rB_{t-1}
\]

- Do we have to repay the debt?
What is the present-value of paying interest in the amount $rB_{t-1}$ forever?

$$rB_{t-1} \left[ \frac{1}{1+r} + \left( \frac{1}{1+r} \right)^2 + \left( \frac{1}{1+r} \right)^3 + \ldots \right]$$

$$= rB_{t-1} \left( \frac{1}{1+r} \left( \frac{1}{1+r} + \left( \frac{1}{1+r} \right)^2 + \left( \frac{1}{1+r} \right)^3 + \ldots \right) \right)$$

$$= rB_{t-1} \left( \frac{1}{1+r} \left( \frac{1+r}{r} \right) \right) = B_{t-1}$$

Repaying the debt today and paying interest forever have the same present value.

However, repaying the debt today puts the full tax burden on the current generation, whereas paying interest forever spreads the tax burden over all current and future generations.
Why can’t the debt grow forever? Consider the debt/GDP ratio

\[
\frac{B_t}{Y_t} = (1 + r) \frac{B_{t-1}}{Y_t} + \frac{G_t - T_t}{Y_t} = (1 + r) \frac{B_{t-1}Y_{t-1}}{Y_t} + \frac{G_t - T_t}{Y_t}
\]

– Let \( \frac{Y_t}{Y_{t-1}} = 1 + g \), where \( g \) has the interpretation of the growth rate of real output.

– Note that \( \frac{1+r}{1+g} \approx 1 + r - g \)

\[
\frac{B_t}{Y_t} = (1 + r - g) \frac{B_{t-1}}{Y_{t-1}} + \frac{G_t - T_t}{Y_t}
\]

– If the change in debt is positive,
\[
\frac{B_t}{Y_t} - \frac{B_{t-1}}{Y_{t-1}} = (r - g) \frac{B_{t-1}}{Y_{t-1}} + \frac{G_t - T_t}{Y_t}
\]

then debt as a fraction of GDP will grow forever

- Societies don’t generally use lump-sum taxes.
  - What would happen if all of labor income had to be taxed to pay the debt?
  - When lenders become concerned that the government has no plans to stop the growth of the debt/GDP, they refuse to continue lending, and the government is forced to adjust
4 Summary

- Significant changes to Keynesian model
  - Efficiency wages and involuntary unemployment at FE
  - Monopolistic competition and price set above marginal cost
  - Sticky prices

- Demand shocks can cause business cycles

- Since monetary and fiscal policy affect demand, both can be used to move the economy back to FE