

# Keynesian Models (IS/LM) (11/11/2010)

Econ 310-004

## Definitions

- **animal spirits** – emotional waves of optimism and pessimism that influence investment spending, causing wild fluctuations
- **broken window fallacy** – fallacy of taking into account easy to see positive effects of a policy, but not taking into account negative hidden effects of a policy
- **liquidity trap** – demand for money is infinitely elastic (LM curve horizontal), causing monetary policy to be completely ineffective

## Equations

- $C = c_0 + c(Y - T)$
- $Y = C + I + G + NX$
- $Y = [1/(1-c)](c_0 - cT + I + G + NX)$
- $Y = C(Y-T, i-\pi^e) + I(i-\pi^e, Y_{-1}) + G + X(\rho, Y, Y^*)$
- $M/P = L(i, Y)$
- $BoP = X(\rho, Y, Y^*) + \sigma(i-i^*) + k$

## Variables

- $C \equiv$  consumption
- $T \equiv$  taxes
- $I \equiv$  investment
- $G \equiv$  government spending
- $NX \equiv$  net exports
- $Y \equiv$  nominal income
- $c_0 \equiv$  autonomous consumption
- $c \equiv$  marginal propensity to consume
- $IS \equiv$  goods market in equilibrium
- $LM \equiv$  money market in equilibrium
- $BoP \equiv$  balance of payments in equilibrium
- $KA \uparrow \equiv$  capital inflow
- $KA \downarrow \equiv$  capital outflow

## Multipliers

- $\Delta Y/\Delta I = 1/(1-c)$
- $\Delta Y/\Delta G = 1/(1-c)$
- $\Delta Y/\Delta NX = 1/(1-c)$
- $\Delta Y/\Delta c_0 = 1/(1-c)$
- $\Delta Y/\Delta T = -c/(1-c)$

## Shifts

- $C \uparrow \rightarrow IS$  shifts right  $\rightarrow i \uparrow, y \uparrow$
- $I \uparrow \rightarrow IS$  shifts right  $\rightarrow i \uparrow, y \uparrow$
- $G \uparrow \rightarrow IS$  shifts right  $\rightarrow i \uparrow, y \uparrow$
- $T \uparrow \rightarrow IS$  shifts left  $\rightarrow i \downarrow, y \downarrow$
- $NX \uparrow \rightarrow IS$  shifts right  $\rightarrow i \uparrow, y \uparrow$
- $MS \uparrow \rightarrow LM$  shifts right  $\rightarrow i \downarrow, y \uparrow$
- $MD \uparrow \rightarrow LM$  shifts left  $\rightarrow i \uparrow, y \downarrow$

## John Maynard Keynes

- father of modern macroeconomics
- student of Alfred Marshall
- wrote *The General Theory of Employment, Interest, and Money*
- helped setup Bretton Woods
- favored fiscal policy over monetary
- opposed classical economists
- theories
  - “in the long run, we’re all dead”
  - animal spirits
  - liquidity preference
  - paradox of thrift
  - liquidity trap

## Interpretations

- hydraulic – ISLM model
- fundamentalist – post-Keynesian
- secular stagnation – no business cycle
- dynamic disequilibrium – Leijonhufvud

## Principles

- Classical economists believed the price level would adjust whenever aggregate demand shifted, so government interventions could have no effect on aggregate output.
  - In classical theory the price level was perfectly flexible, which means AS was vertical.
- Keynes believed classical economics held in the long run, but not in the short run.
  - In orthodox Keynesianism the price level was rigid downward, which means AS was horizontal.
- Increases in consumption, investment, government spending, net exports, and autonomous consumption are positively related to an increase in output.
- An increase in taxes is negatively related to an increase in output.
- Investment is the purchase of new physical assets (e.g., new machines or new houses).
- The tax multiplier is less than the other multipliers.
  - Keynesians believe increases in government spending are more effective than tax cuts.
- Comparing spending to tax multipliers doesn't take into account the growth incentives of low taxes.
- Aggregation obscures that some spending is less useful than other. (e.g., broken window fallacy)
- The IS/LM model is hydraulic Keynesianism, a general equilibrium framework for Keynesian ideas popularized by John Hicks and Paul Samuelson.
- The orientation of the LM curve determines policy effectiveness.
  - LM curve vertical
    - fiscal policy fails
    - monetary policy works
    - This is also known as complete crowding out:  $G \uparrow \rightarrow I \downarrow, NX \downarrow \rightarrow y$  constant
  - LM curve horizontal
    - fiscal policy works
    - monetary policy fails
    - This is also known as a liquidity trap. Keynes preferred fiscal policy for this reason.
- In the long run the IS and LM curves should intersect at the natural rate of unemployment.
  - If right of  $y_n$ :  $P \uparrow \rightarrow (M/P) \downarrow \rightarrow$  LM shift left (until IS & LM intersect at  $y_n$ )
- The Mundell-Fleming model extends IS/LM to an open economy by adding a balance of payments line.
  - When there is perfect capital mobility, the BoP line is horizontal.
    - above BoP line: capital inflow
    - below BoP line: capital outflow
  - When there is no capital mobility, the BoP line is vertical.
    - left of BoP line: current account surplus
    - right of BoP line: current account deficit
  - When there is some capital mobility, the BoP line is upward sloping.
    - above BoP line: capital inflow
    - below BoP line: capital outflow
- Manipulating the Mundell-Fleming model takes mastering a handful of rules.
  - float secondary effects: IS + BoP curves move
  - fixed secondary effect: LM curve moves
  - perfect/some capital mobility mechanism: interest rates
  - no capital mobility mechanism: goods trade
- If two countries trade a lot, one country's policies can effect the other country.
  - Fiscal policy helps the other country.
  - Monetary policy hurts the other country.

*Note: Watch the Keynes vs. Hayek rap video before the 11/16/2010 class. There will be 1-2 quiz questions on it.*