Traditional Models of Macroeconomics

This material reflects 2014 revision of coursebook Chapter 2, (now Chapter 8) covering income-expenditure, quantity theory, IS/LM, and AS/AD models briefly.

Why are there multiple models?

- Models are built to explain specific aspects of macroeconomy: These various models explain different aspects and different historical phenomena.
- Income-expenditure model: Core of demand-based theory of output determination that has relevance in period like Great Depression
- IS/LM: Refined version of income-expenditure model that “reins it is” a bit
- Quantity theory: Good explanation of long-run money-inflation connection
- AS/AD: Attempt to connect insights of IS/LM and similar models about the short run with the quantity theory's predictions about the long run

How do these models relate to the modern macro theories we will discuss?

- To a considerable degree, modern theories attempt to put microfoundations under the simple models: For example, the new Keynesian IS curve and new Keynesian Phillips curve.
- Most of what we do in the course can be summarized in a basic AS/AD framework if we want to.

Quantity theory

- Assumptions
  - Output is totally supply-determined; AS is perfectly inelastic at “natural output”
    - Efficient output is what perfectly efficient economy would produce with current endowments of resources and current preferences about work, saving, etc.
    - Natural output is the (smaller) amount that an economy would produce when the microeconomic imperfections such as monopolies, taxes, etc. are taken into account.
    - Actual output may be above or below natural output depending on macroeconomic conditions—but not in the quantity theory where \( Y = Y_n \) by assumption.
  - Money demand is assumed exogenous (and not clear how to change model to endogenize)
  - Simplistic theory of money demand (constant velocity)
- Endogenizing velocity (by relating to interest rate) delivers a model not unlike IS/LM

- Assessing the assumptions
  - Perfectly inelastic AS is probably reasonable in long run
  - Can be combined as theory of AD with other AS models
  - Theory of AD is simplistic in the extreme

- Key insights
  - Money is neutral
  - Relationship (which seems reasonably accurate in long run) among money growth, real growth, and inflation: \( \pi = \mu - g_r \)

**Income-expenditure model**

- Assumptions
  - Output is demand-determined (AS is perfectly elastic)
  - All components of spending except consumption are exogenous

- Assessing the assumptions
  - Perhaps reasonable in severe depression with much unused capacity
  - Investment in severe depression is probably more sensitive to prospects for future output than to interest cost
    - If higher current output signals higher expected future output, then this would argue for \( I(Y) \) alongside \( C(Y) \), which would make the multiplier larger.
  - Lacks strong microfoundations: Keynes’s “fundamental psychological law”

- Key insights
  - Exogenous increases in spending (from whatever category) raise income, which cause further increases in spending
  - Has provided argument for “fiscal stimulus” from the New Deal to the 2009 American Reconstruction and Recovery Act

**IS/LM model**

- Assumptions
  - Embeds the income-expenditure model in a framework that endogenizes the interest rate and investment
  - Incorporates equilibrium in money-holding (asset markets) alongside income-expenditure equilibrium
  - Money supply is assumed exogenous
  - Retains the assumption of perfectly elastic AS, if we think of IS/LM as determining \( Y \) with fixed/given \( P \)
- Assessing the assumptions
  - Makes investment assumption more relevant for non-depression economy, but the perfectly elastic AS is problematic
  - Modern central banks operate using rules that endogenize $M$
    - This can be incorporated quite easily: Romer’s IS/MP model replaces the LM curve with monetary-policy reaction function
  - Still lacks strong microfoundations
  - If combined with realistic AS curve, can be more appropriate for non-depression economy
  - Assumptions were convincing enough to attract most macroeconomists from the 1930s through the 1960s
- Key insights
  - Multiplier is limited by crowding out
  - Models stimulative role of monetary policy
  - Can be combined as theory of AD with other AS models

**Romer’s IS/MP variant**
- Most central banks now target an interest rate rather than money supply
- $MP$ curve reflects this by modeling central bank’s decision rule: $r = r(\ln Y - \ln \bar{Y}, \pi)$
  - $MP$ curve slopes upward and depends on $\pi$

**Aggregate supply/Aggregate demand model**
- Assumptions
  - Aggregate demand curve based on IS/LM or quantity theory
  - Short-run aggregate supply curve that slopes upward due to one of several variant models:
    - Wage stickiness
    - Price stickiness
    - Imperfect information
  - Long-run aggregate supply curve is vertical at natural output
- Assessing the assumptions
  - Weak microfoundations for AD, but somewhat better for AS
  - Framework is flexible enough to allow lots of variations in specific models for both AD and AS
- Key insights
  - Aggregate demand can affect output in the short run but should not be a major factor in the long run
  - Long-run inflation is determined similarly to quantity theory
o We can reconcile simple Keynesian ideas (income-expenditure, IS/LM) with long-run inflation behavior and long-run neutrality of money