

# 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 in” 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:  $\pi = \mu - g_Y$

### 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

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- We can reconcile simple Keynesian ideas (income-expenditure,  $IS/LM$ ) with long-run inflation behavior and long-run neutrality of money