Lecture 9
Chapter 11: The AS/AD Model

• Derivation of AD curve from IS curve and Fed rule
• AS and AD together
• Shape of AS curve and the effects on policy responses
• Reduced form equation for AS/AD model—optional
NOTATION

- $Y$ output or income
- $C$ consumption
- $I$ investment
- $G$ government purchases of goods and services—exogenous
- $TR$ government spending on transfer payments (a negative tax)—exogenous
- $t$ tax rate—exogenous
- $TAX$ taxes
- $T$ net taxes ($TAX - TR$)
- $Y_d$ disposable income ($Y - T$)
- $r$ interest rate
- $P$ price level
- $PM$ price of imports (cost variable)—exogenous
- $Z$ "Z" variables in Fed rule—exogenous
AS/AD MODEL

- \( Y_d \equiv Y - T \)    Definition
- \( C = a + bY_d \)    Behavioral (households)
- \( I = d - e \cdot r \)    Behavioral (firms)
- \( Y = C + I + G \)    Equilibrium condition
- \( TAX = tY \)    Behavioral (government)
- \( T \equiv TAX - TR \)    Definition
- \( P = \delta + eY + \zeta PM \)    Behavioral (AS curve, firms)
- \( r = \alpha Y + \beta P + \gamma Z \)    Behavioral (Fed rule)
Derivation of AD curve

So when P↑, Y↓ -- AD curve
**SOLUTION of AS/AD MODEL**

\[ Y = C + I + G = a + b(Y - tY + TR) + d - e \cdot (\alpha Y + \beta[\delta + \epsilon Y + \zeta PM] + \gamma Z) + G \]

Let \( q = 1 - b + bt + e\alpha + e\beta\epsilon \).

Reduced form equation is:

\[ = \frac{a}{q} + \frac{b}{q} TR + \frac{d}{q} - \frac{e\beta\delta}{q} - \frac{e\beta\zeta}{q} PM - \frac{e\gamma}{q} Z + \frac{1}{q} G \]

If \( b = .75, t = 1/3, \alpha = .3, e = .3, \epsilon = .3, \beta = .3 \), then \( q = 0.617 \), so \( \frac{1}{q} = 1.62 \). This compares to \( \frac{1}{1-b+bt} = 2.0 \).

Why is the government spending multiplier smaller when the AS curve and/or the Fed rule are added to the model?