

Lecture 4

Chapter 8

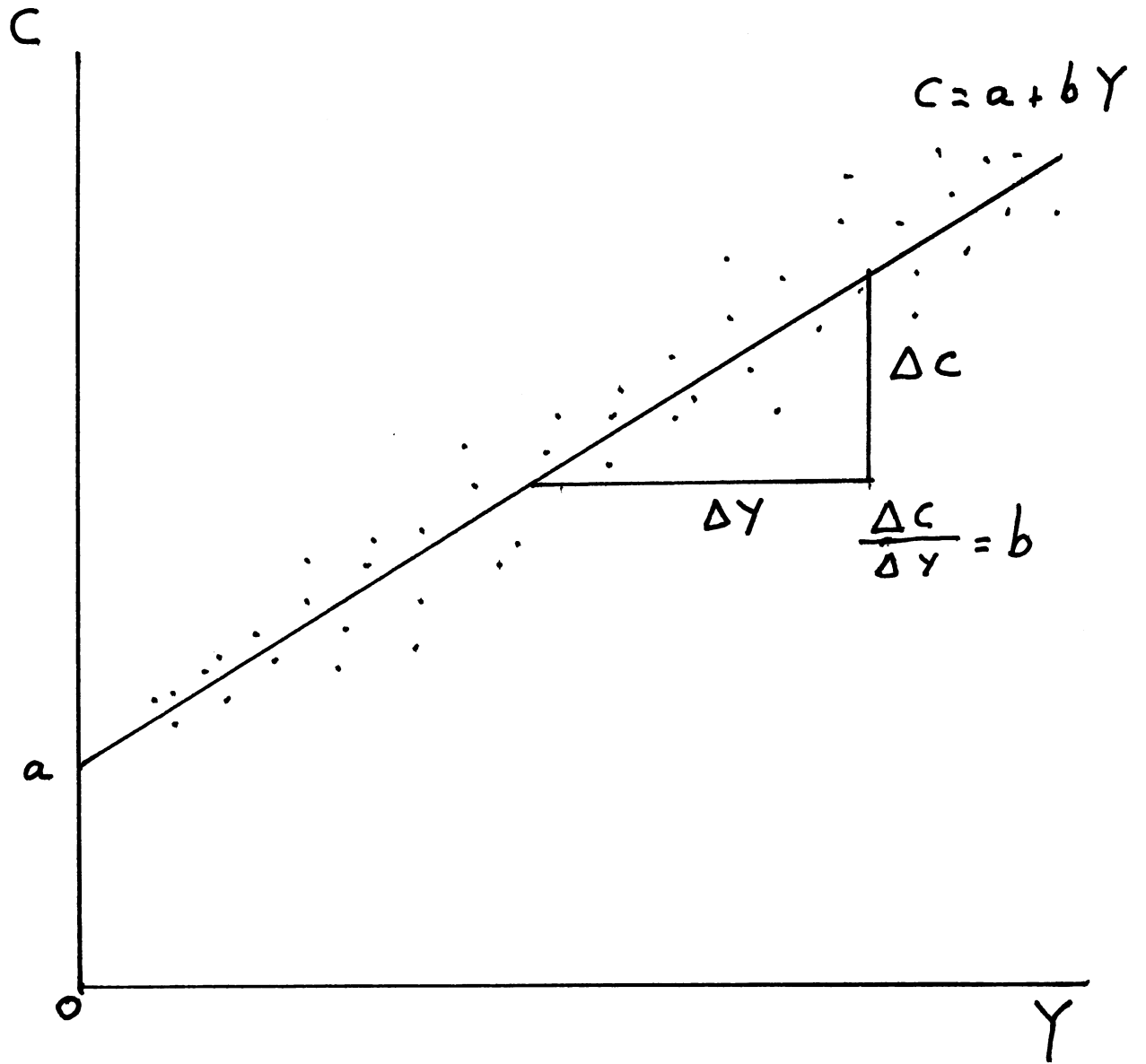
- Introduce notation and basic concepts about modeling – not in book
- Brief discussion of least squares – not in book
- Simple consumption function
- Equilibrium condition
- Derive multiplier
- Next lecture add government to the model – Chapter 9

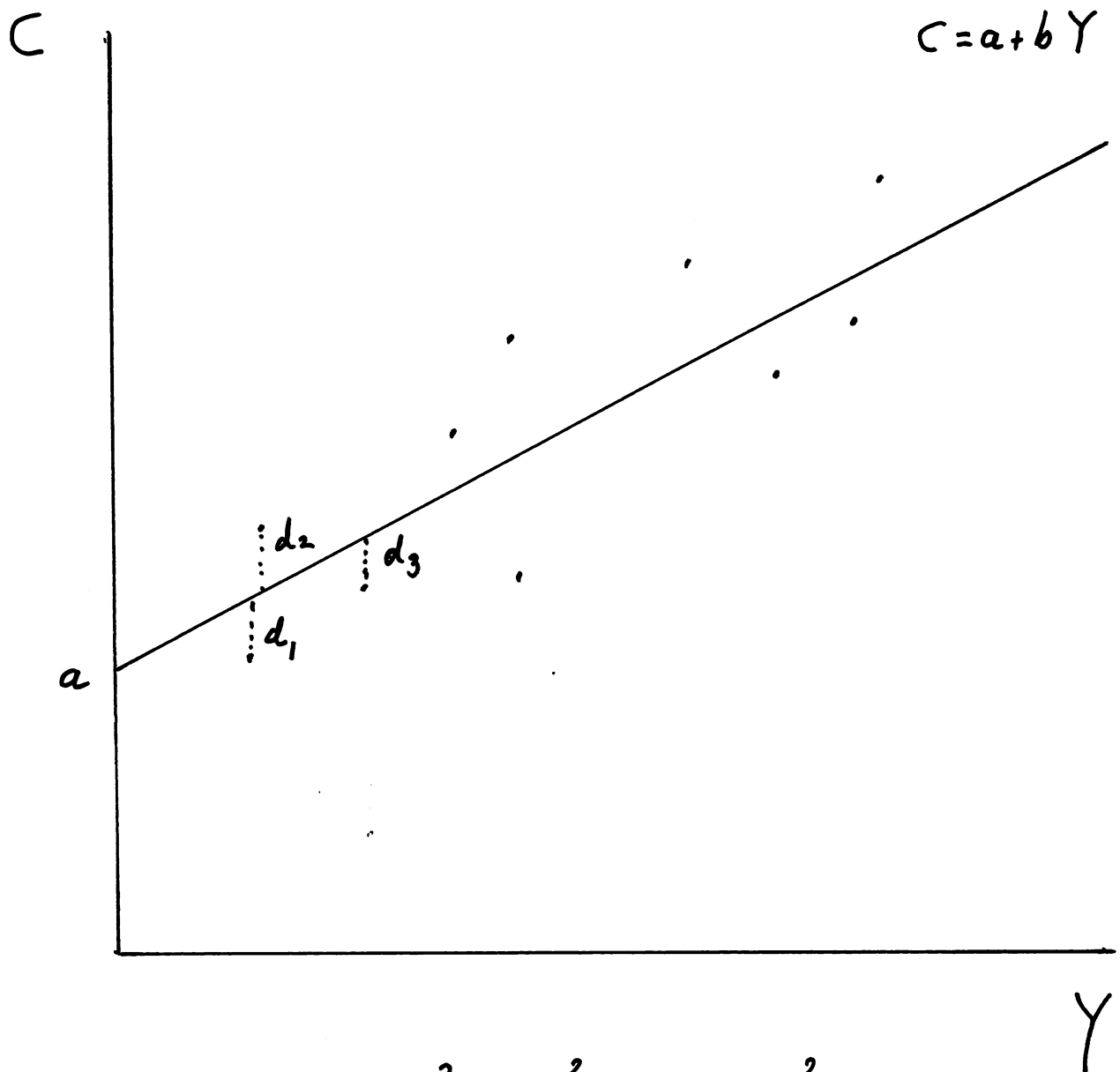
NOTATION

- Endogenous Variables
- Exogenous Variables
- Behavioral Equations
- Identities (\equiv)
- Equilibrium Conditions
- Parameters or Coefficients
- Reduced Form Equations

THE MULTIPLIER MODEL

- Y aggregate output or income
- C aggregate consumption
- I planned aggregate investment
- S aggregate saving
- $Y = C + I$ Equilibrium condition
- $C = a + bY$ Behavioral
- $S \equiv Y - C$ Definition
- $\frac{\Delta C}{\Delta Y} \equiv MPC \equiv b$
- $\Delta S \equiv \Delta Y - \Delta C$
- $\frac{\Delta S}{\Delta Y} \equiv MPS \equiv \frac{\Delta Y - \Delta C}{\Delta Y} \equiv 1 - \frac{\Delta C}{\Delta Y} \equiv 1 - MPC$





$$SUM = d_1^2 + d_2^2 + \dots + d_{10}^2$$

LEAST SQUARES : Pick a and b
such that SUM is the smallest.

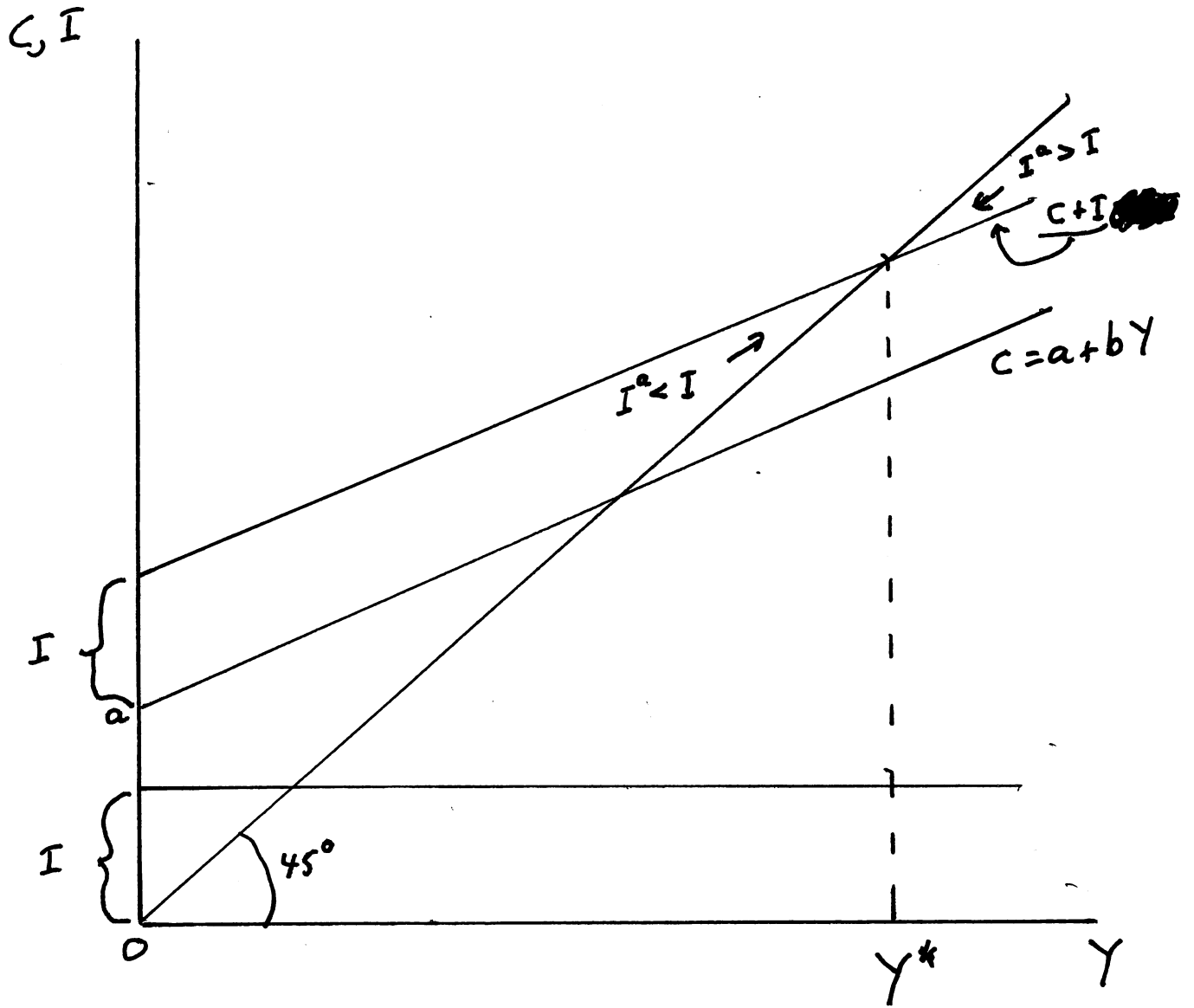
EQUILIBRIUM

- I^a actual aggregate investment
- $Y \equiv C + I^a$ Definition (always true in the data)

If $Y = C + I$, then $I^a = I$

If $Y > C + I$, then $I^a > I$ (too much inventory investment)

If $Y < C + I$, then $I^a < I$ (too little inventory investment)



SOLUTION OF THE MULTIPLIER MODEL

$$C = a + bY \quad \text{Behavioral}$$

$$Y = C + I \quad \text{Equilibrium Condition}$$

$$Y = a + bY + I$$

$$Y - bY = a + I$$

$$Y = \frac{a}{1-b} + \frac{1}{1-b}I \quad \text{Reduced Form Equation}$$

$$C = a + b(C + I)$$

$$C - bC = a + bI$$

$$C = \frac{a}{1-b} + \frac{b}{1-b}I \quad \text{Reduced Form Equation}$$

