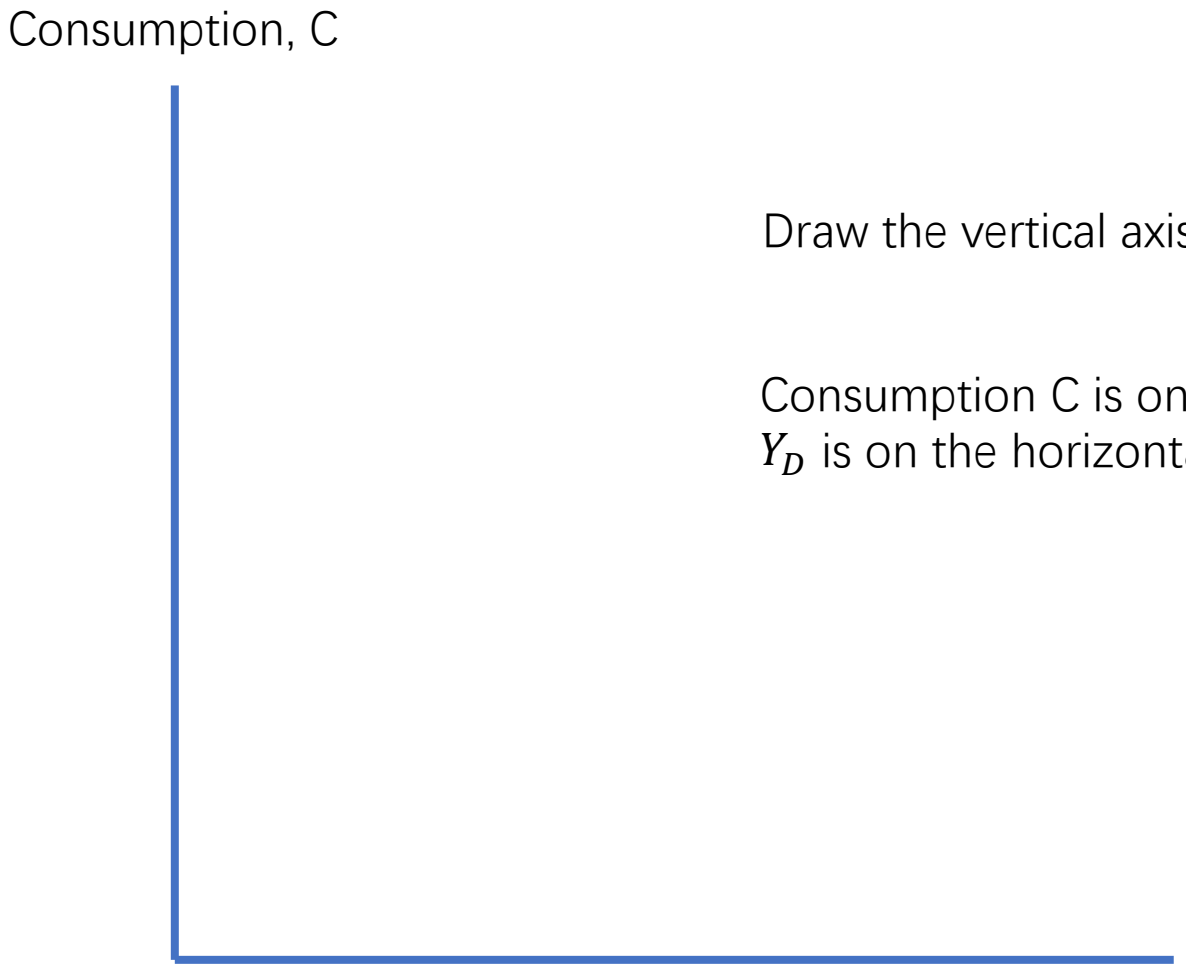
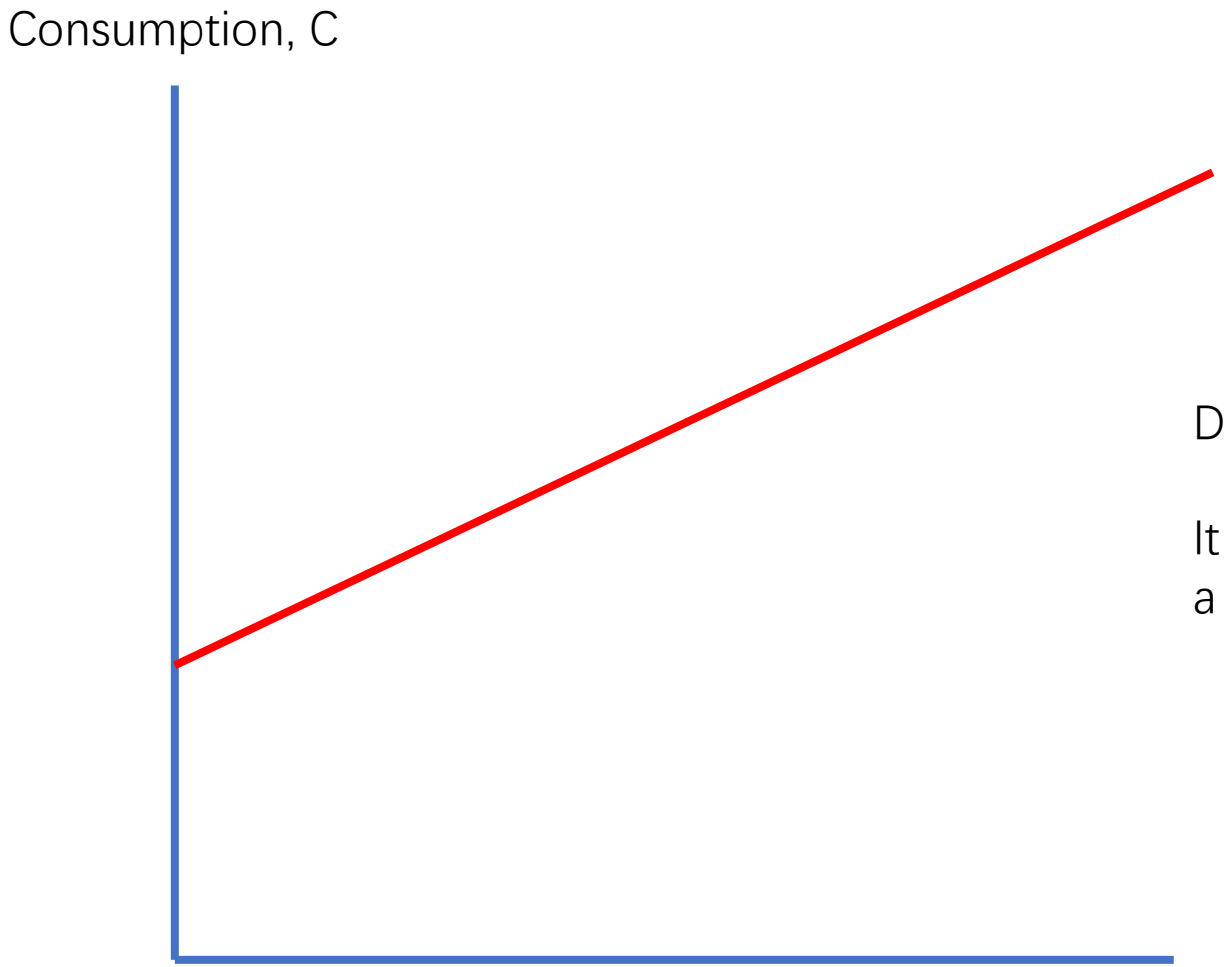
Consumption and Disposable Income



Draw the vertical axis and the horizontal axis first

Consumption C is on the vertical axis, Disposable income Y_D is on the horizontal axis.

Consumption and Disposable Income



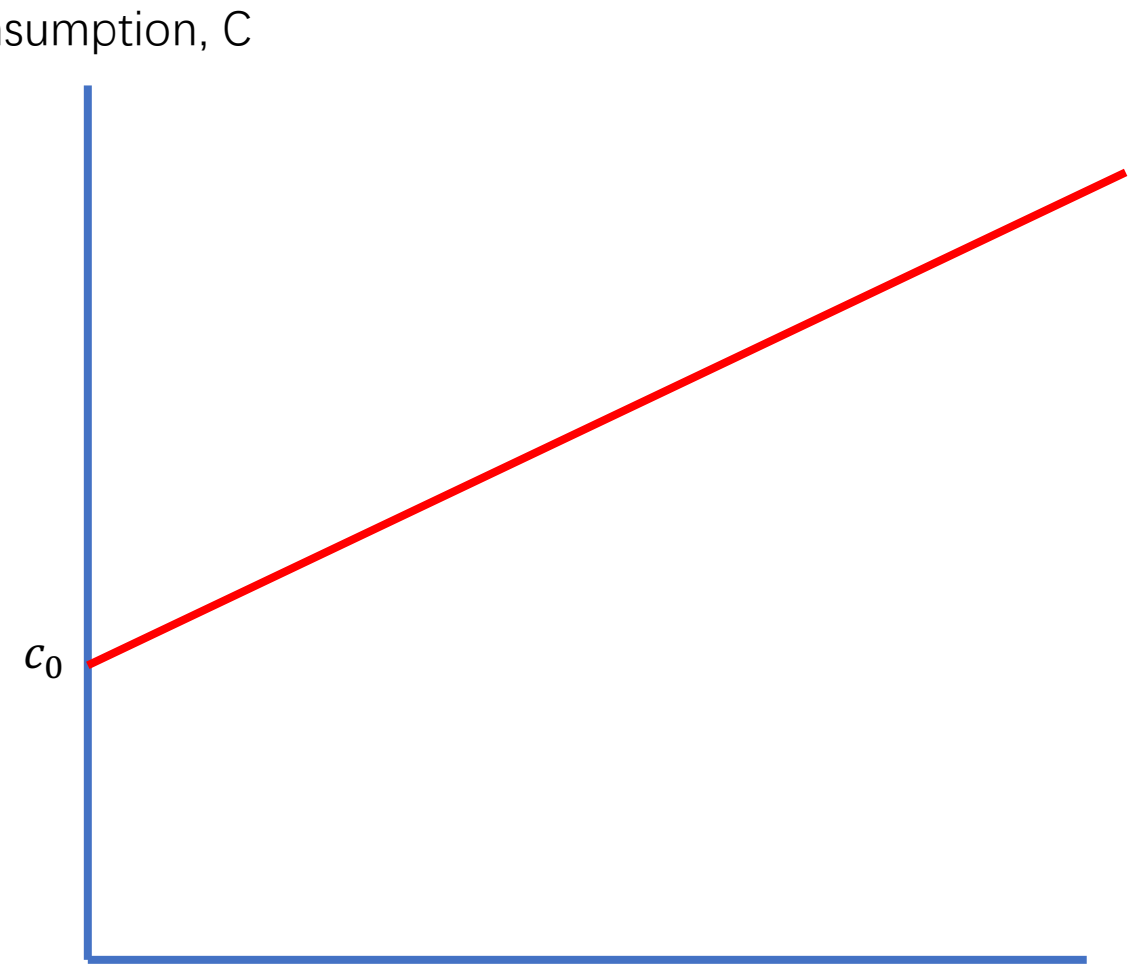
Consumption Function

$C = c_0 + c_1 Y_D$

Draw the consumption function

It is a linear relation, so we use a straight line.

Consumption and Disposable Income

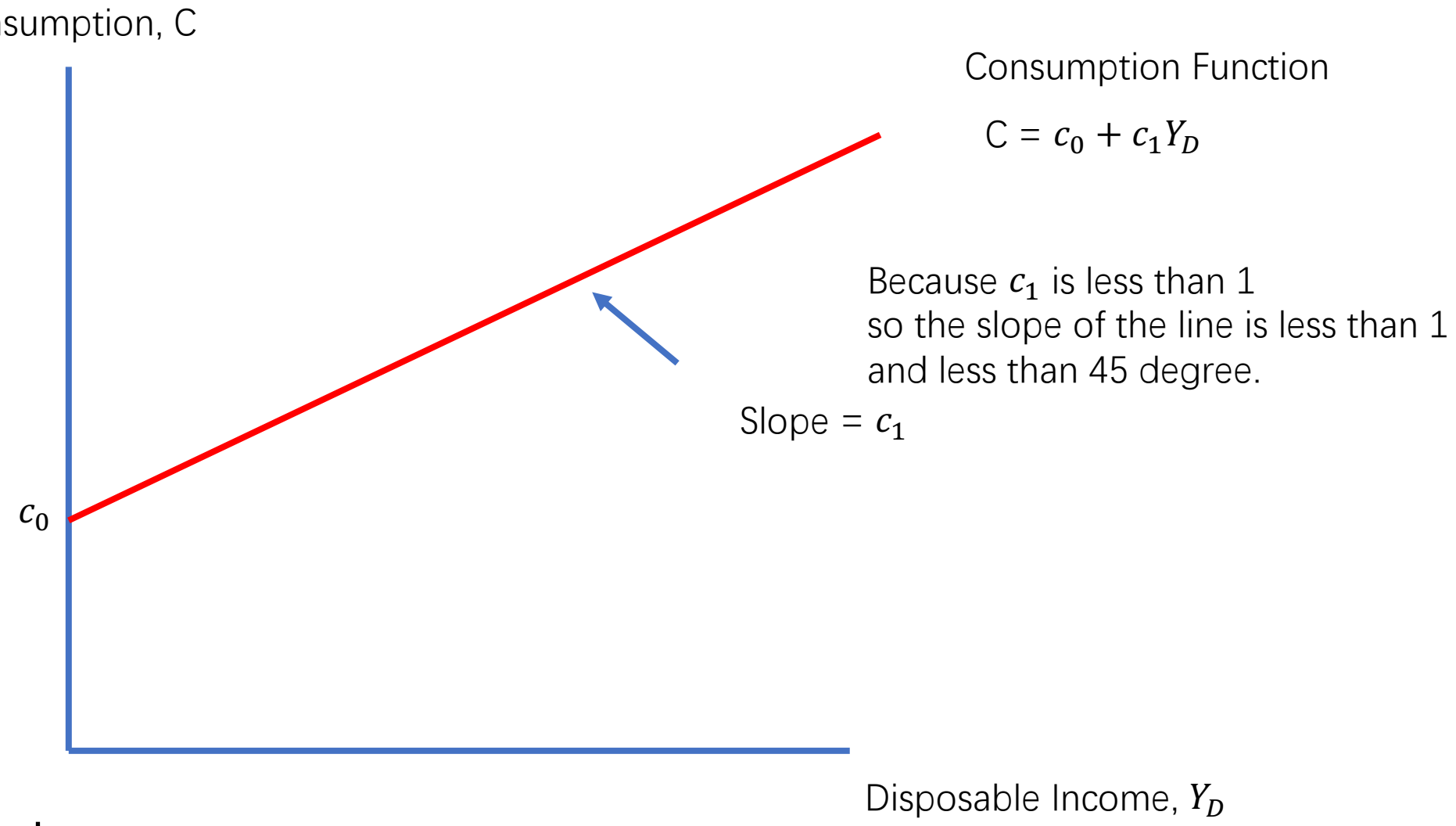


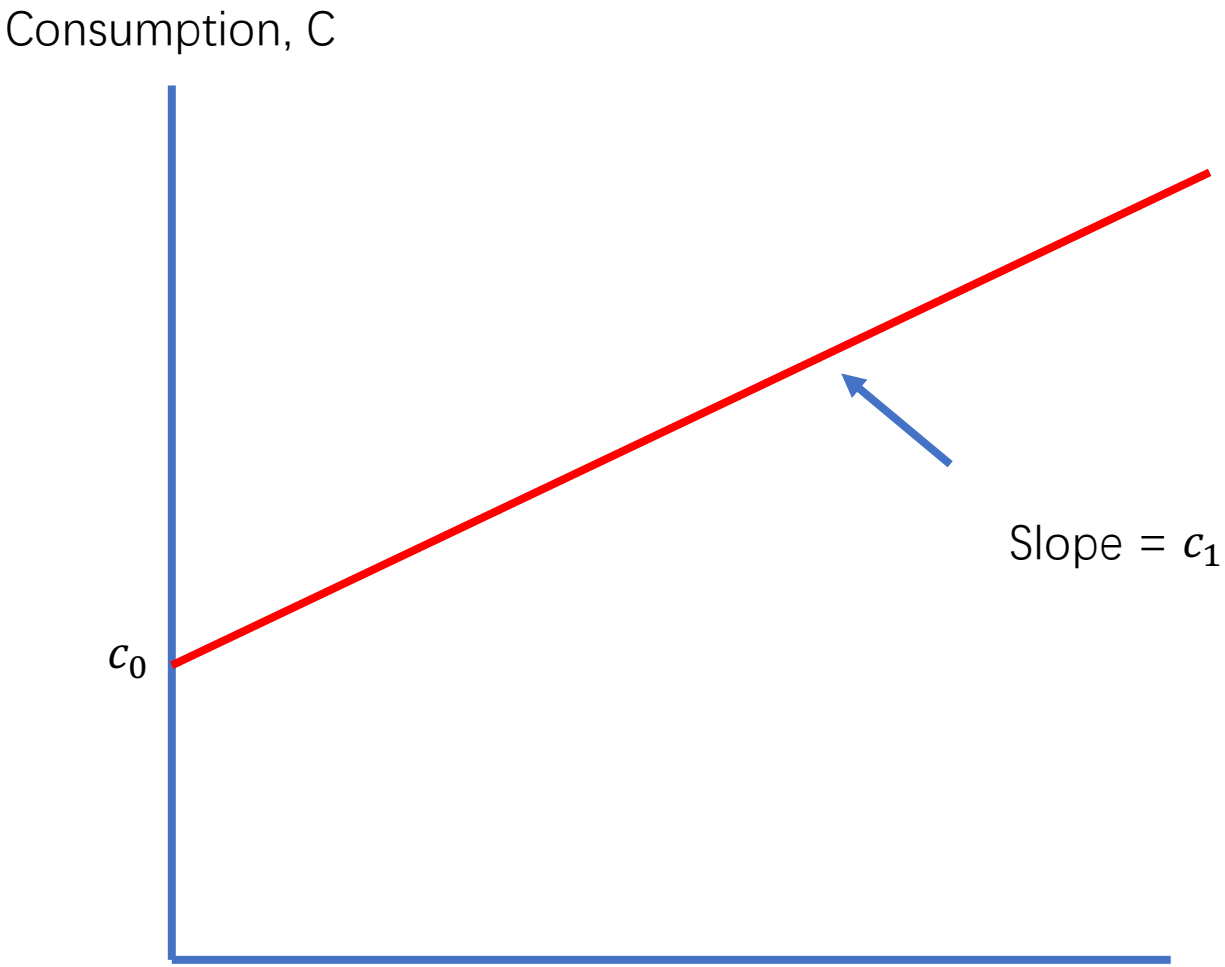
Consumption Function

$C = c_0 + c_1 Y_D$

c_0 is the intercept with the vertical axis. It is the consumption when disposable income $Y_D = 0$.

Consumption and Disposable Income



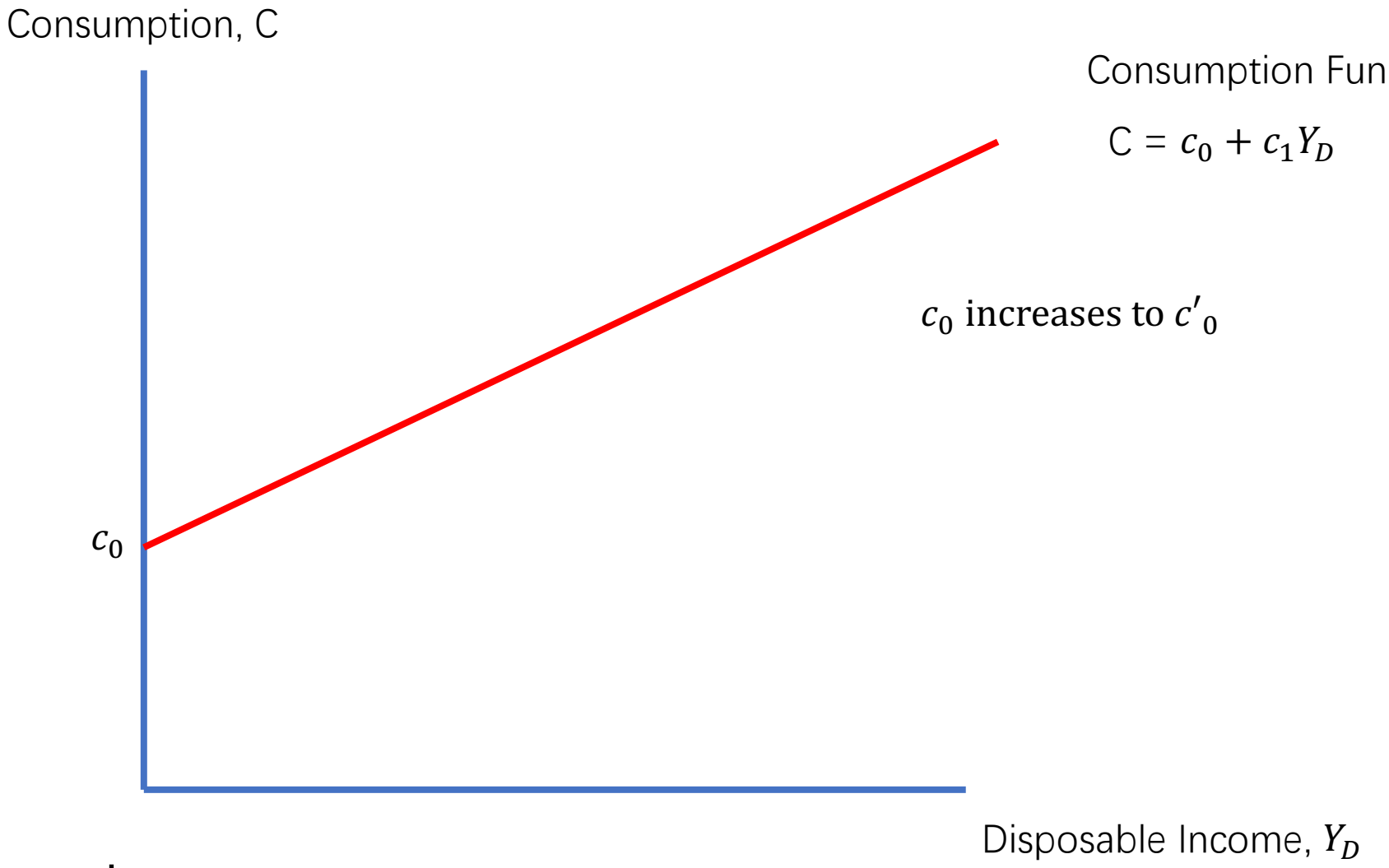


Consumption Function

$C = c_0 + c_1 Y_D$

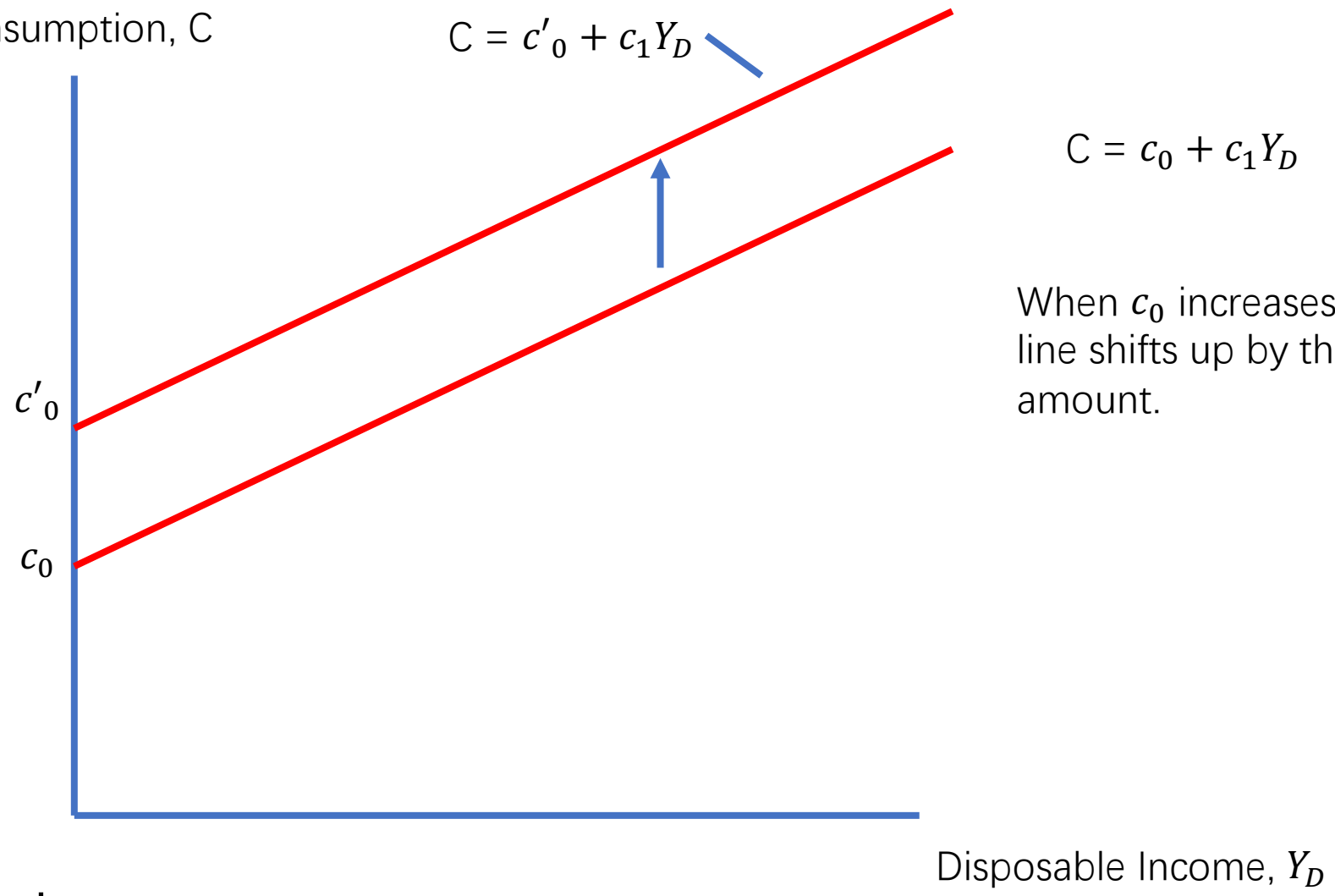
$$c_1 = \frac{\Delta C}{\Delta Y_D}$$

Consumption and Disposable Income



Consumption and Disposable Income

Consumption and Disposable Income



When c_0 increases, the line shifts up by the same amount.

1 Characterizing Equilibrium Output in Algebra

Let's start with the equilibrium condition $Y = Z$ and use the identity of Z:

$$Y = c_0 + c_1(Y - T) + \bar{I} + G$$

Expand and rewrite the equation:

$$Y = c_0 + c_1 Y - c_1 T + \bar{I} + G$$

Move $c_1 Y$ to the left hand side so that we don't have terms with Y on the right hand side of the equation:

$$Y - c_1 Y = c_0 - c_1 T + \bar{I} + G$$

$$\Rightarrow (1 - c_1)Y = c_0 + \bar{I} + G - c_1 T$$

Divide both sides by $(1 - c_1)$

$$\begin{array}{ccccc} Y & = & \frac{1}{1-c_1} & & [c_0 + \bar{I} + G - c_1 T] \\ & & \text{the multiplier} & & \text{Autonomous spending} \end{array}$$

We characterize equilibrium output in algebra and solve for Y.
Y is written as a function of exogenous variables and parameters.

In this model:
Endogenous variable: Y
Exogenous variable: $\bar{I}$, G, T
Parameters: c_0, c_1,

$$Y = \frac{1}{1-c_1} [c_0 + \bar{I} + G - c_1 T]$$

If we know the values of c_0, c_1, $\bar{I}$, G, T, we can calculate the equilibrium value of Y.

2 Sample Question 2

Government spending G increases by 100

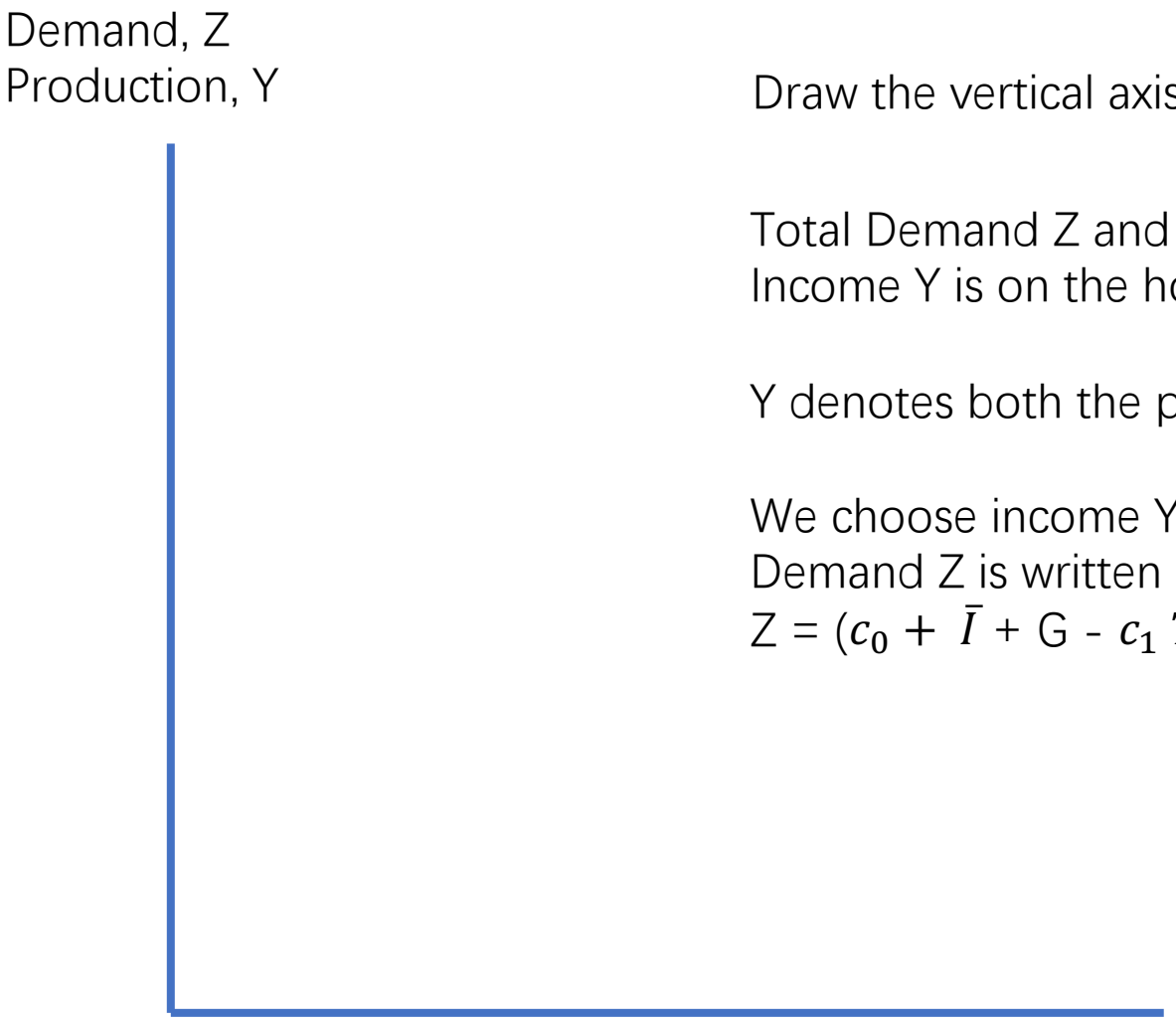
Then $A = c_0 + \bar{I} + G - c_1 T$ increases by 100

Given the equation of the equilibrium output in this Lecture:

$$Y = \frac{1}{1-c_1}[c_0 + \bar{I} + G - c_1 T]$$

$$\Rightarrow \Delta Y = \frac{1}{1-c_1} \times 100 = \frac{1}{1-0.75} \times 100 = 400$$

B is correct.



Draw the vertical axis and the horizontal axis first

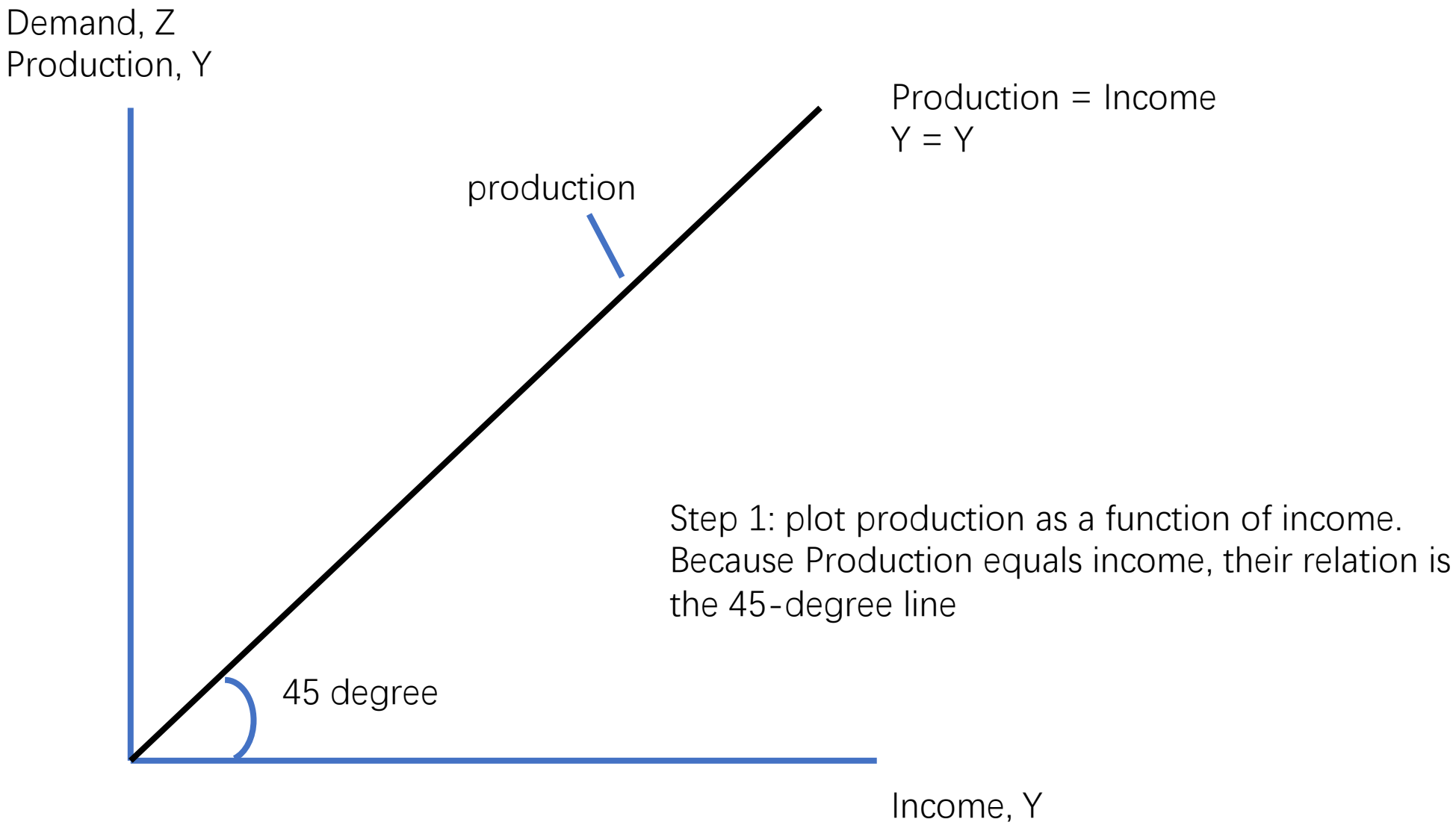
Total Demand Z and Production Y are on the vertical axis, Income Y is on the horizontal axis.

Y denotes both the production and the income.

We choose income Y to be the horizontal axis is because Demand Z is written as a function of income

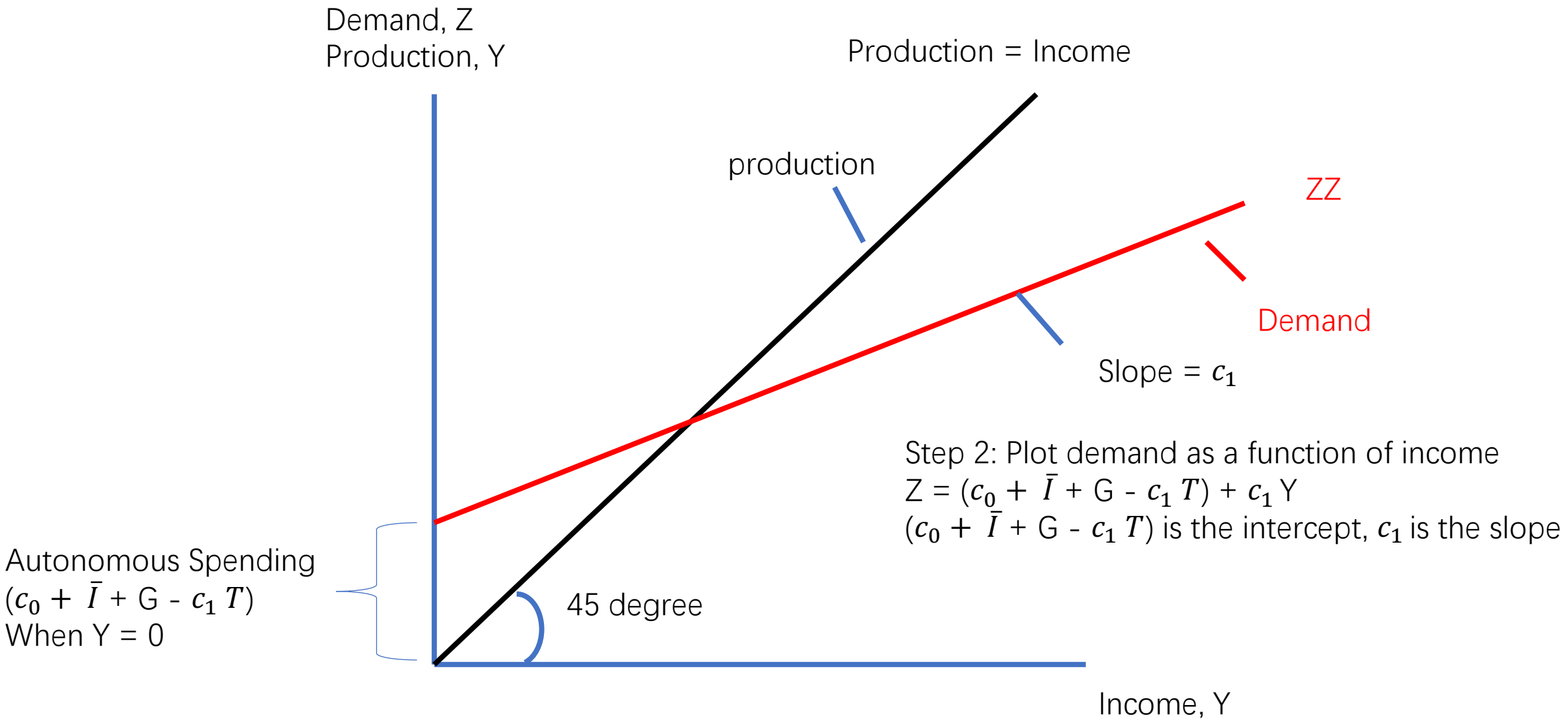
$Z = (c_0 + \bar{I} + G - c_1 T) + c_1 Y$

Equilibrium in the Goods Market

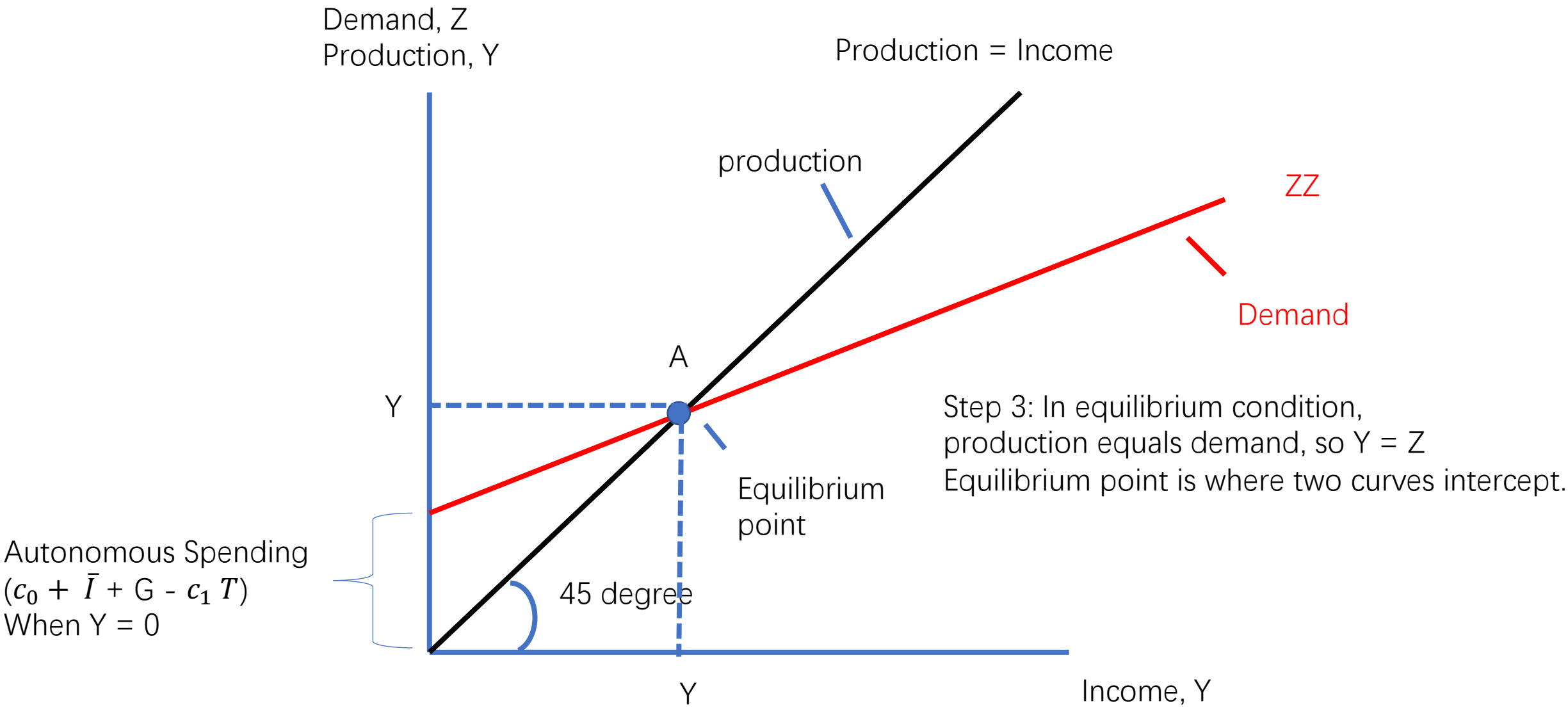


Step 1: plot production as a function of income. Because Production equals income, their relation is the 45-degree line

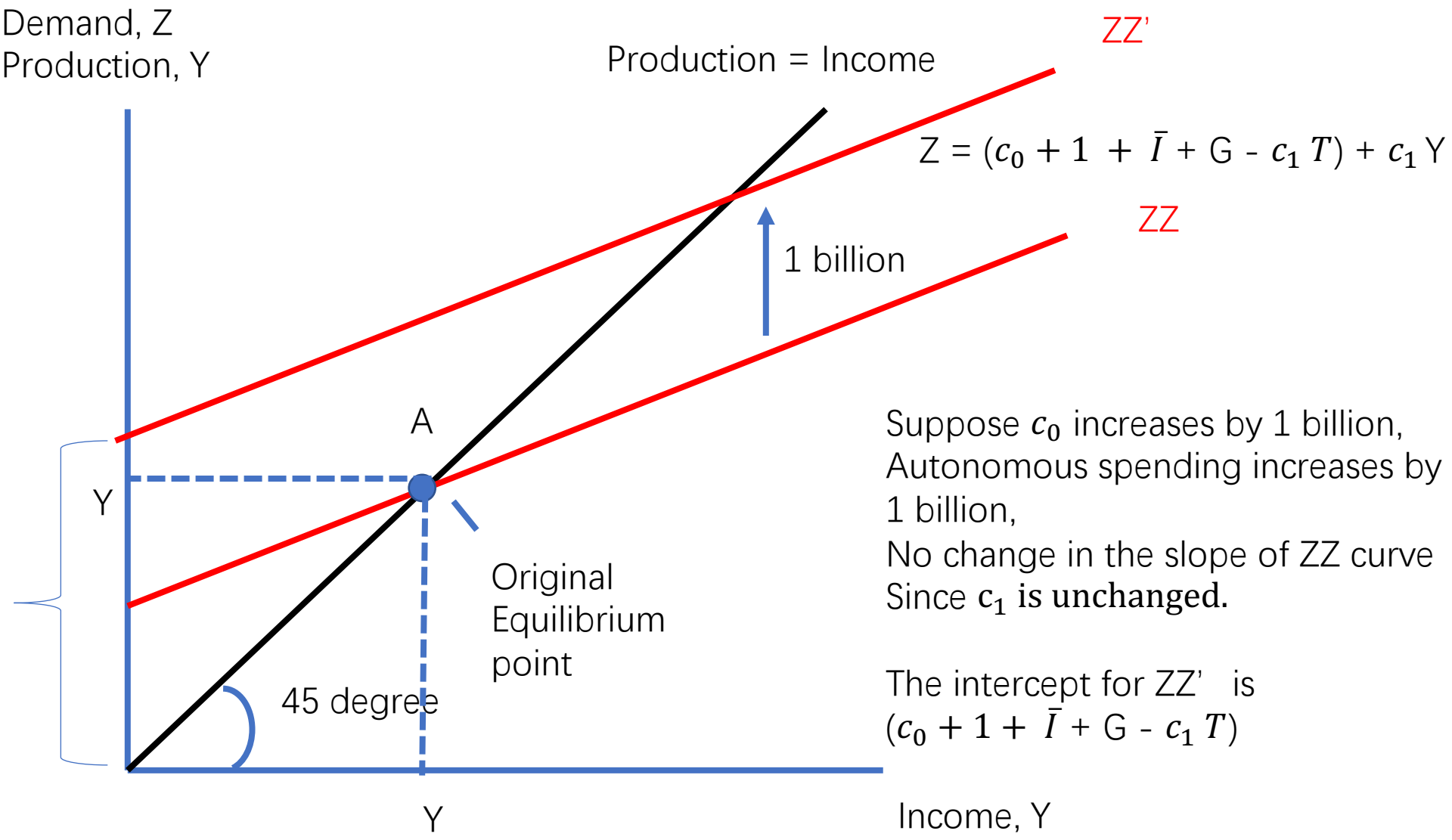
Equilibrium in the Goods Market



Equilibrium in the Goods Market



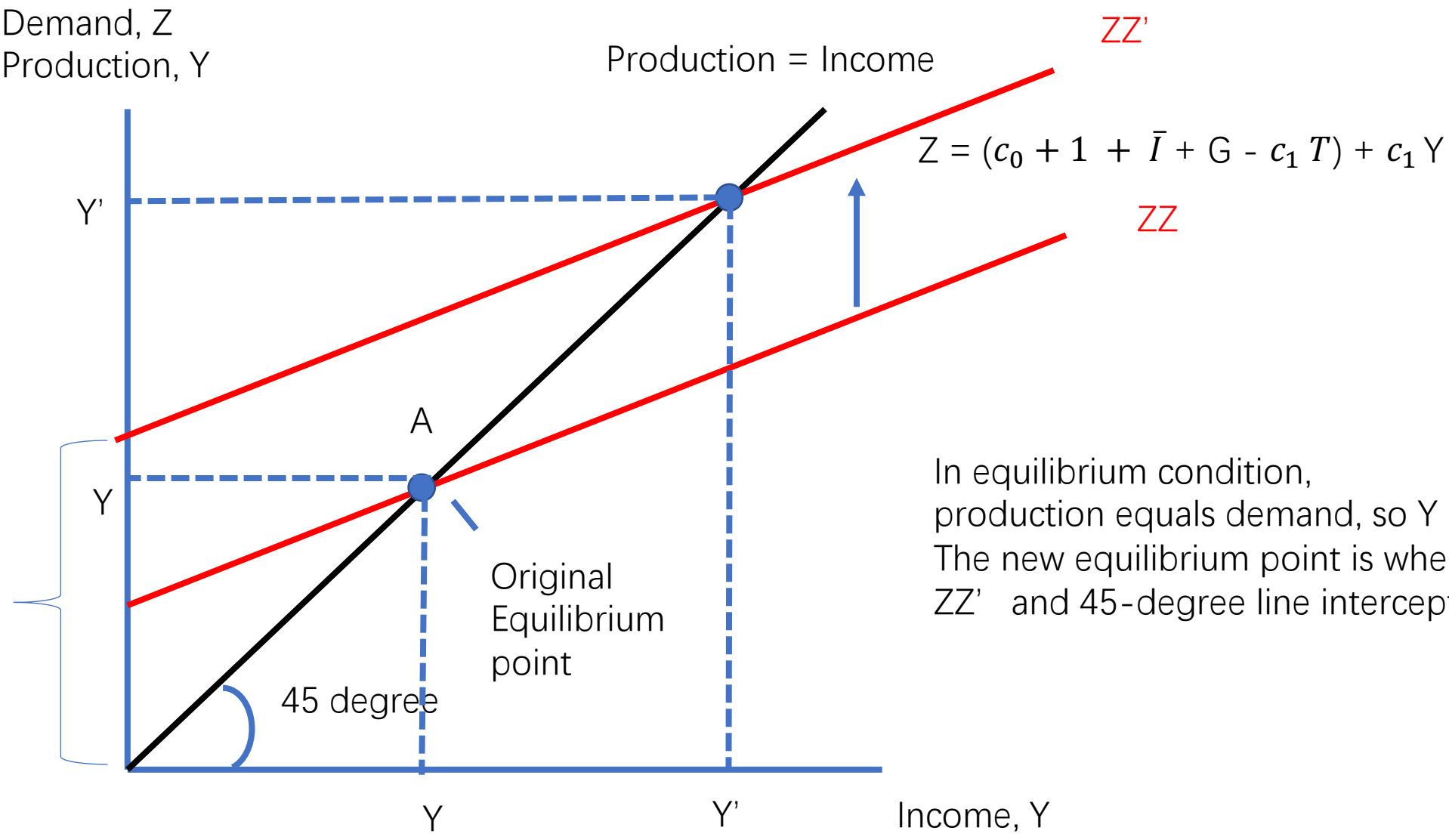
Equilibrium in the Goods Market



Suppose c_0 increases by 1 billion,
Autonomous spending increases by 1 billion,
No change in the slope of ZZ curve
Since $\mathbf{c_1}$ **is unchanged.**

The intercept for ZZ' is
$(c_0 + 1 + \bar{I} + G - c_1 T)$

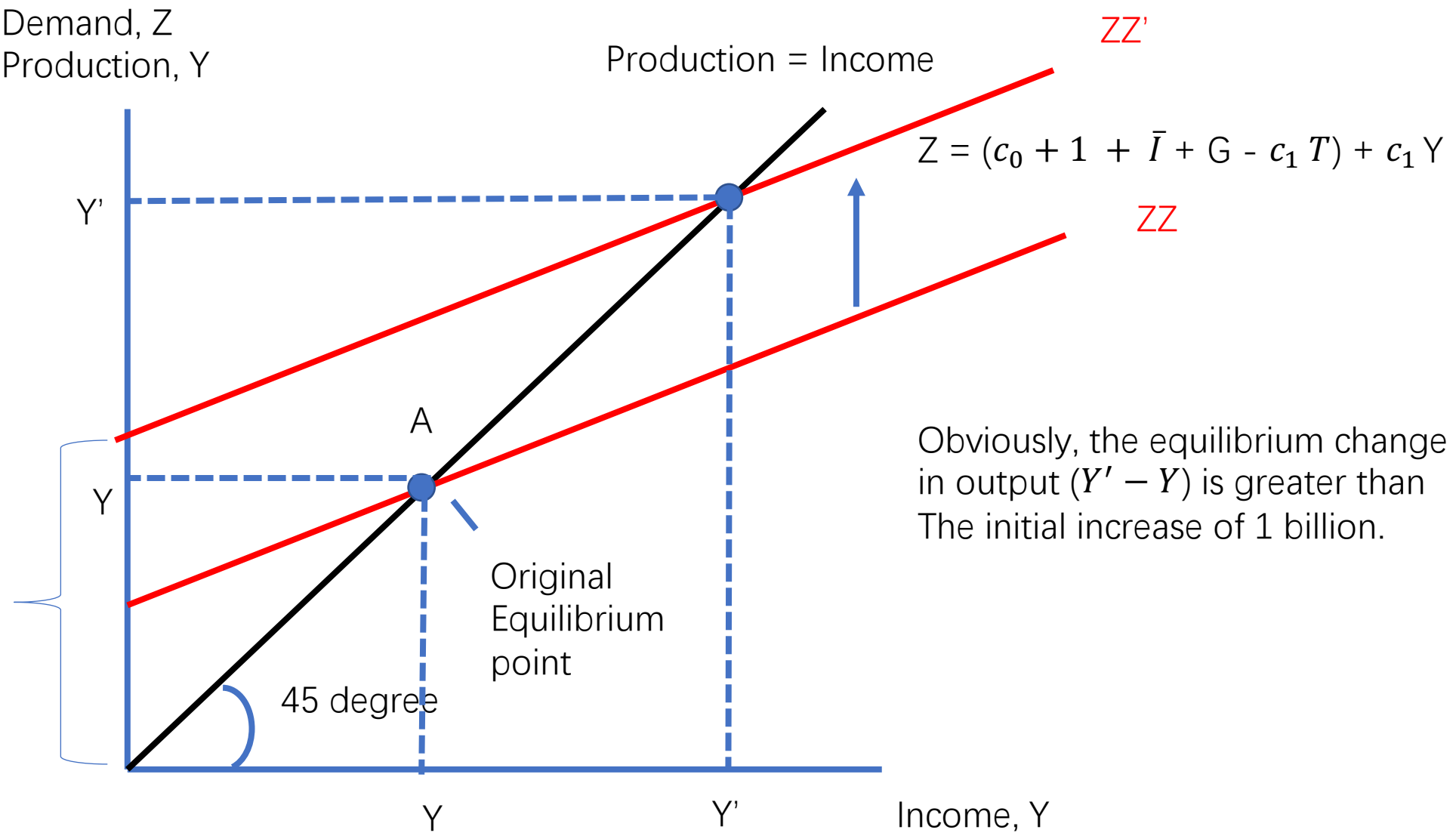
An Increase in Autonomous Spending



Autonomous Spending
$(c_0 + 1 + \bar{I} + G - c_1 T)$

In equilibrium condition,
production equals demand, so Y = Z
The new equilibrium point is where
ZZ' and 45-degree line intercept.

An Increase in Autonomous Spending



An Increase in Autonomous Spending