Government Expenditure, Taxes and Equilibrium GDP

Basic government budget has two components:

1. A plan for ***government expenditures***, **G**,

2. A ***net tax rate*** on income, **t**, to raise revenue.

Government expenditure (G) ≡ government spending on currently produced goods and services

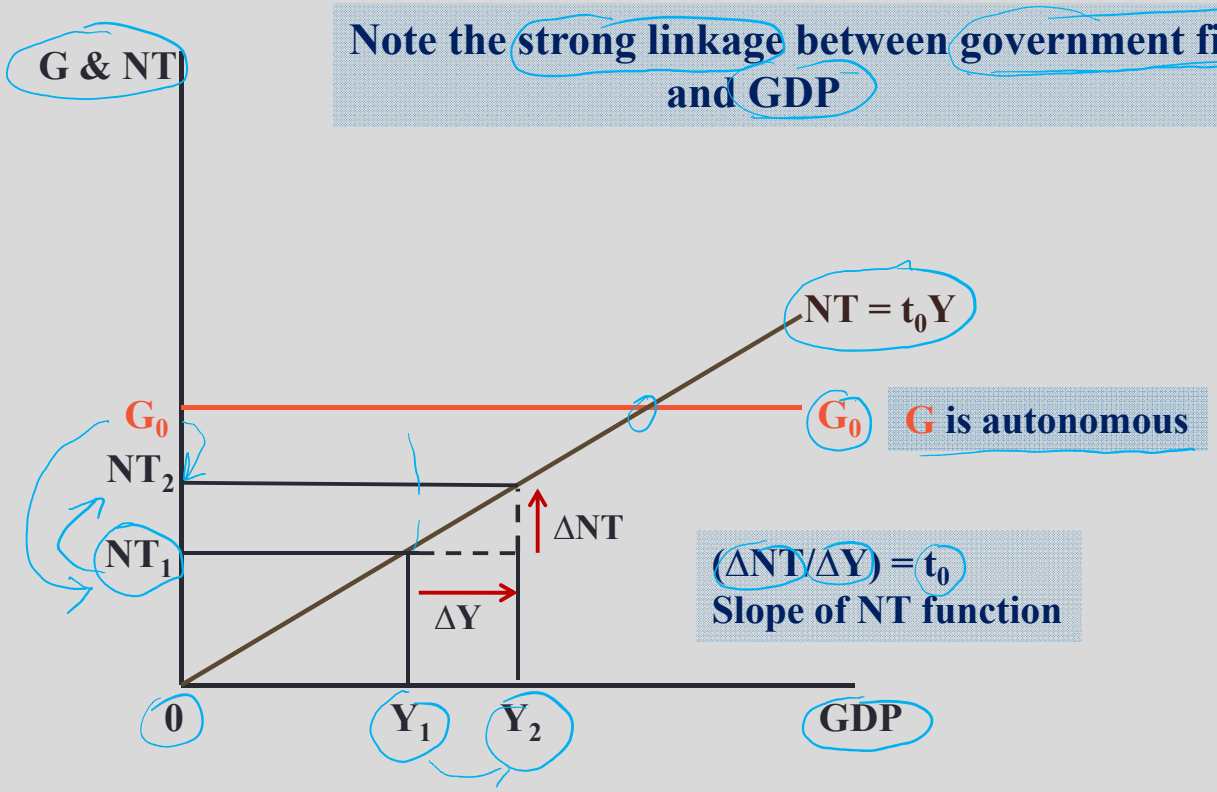
G is ***autonomous***, ie $G = G_0$

Net taxes NT = tY ≡ taxes on incomes minus transfer payments (OAS, EI).

NT = tY is ***induced:*** $0 < t < 1$ $t = \Delta NT/\Delta Y$

Government Expenditure, Taxes and Equilibrium GDP

Government Expenditure and Net Tax Revenue Function



Government Expenditure, Taxes and Equilibrium GDP

Effect of taxes on consumption expenditures C

- Net tax rate on income reduces *induced* consumption
- Disposable income is ***after tax income***
- Disposable income YD = Y – NT
- **Consumption = autonomous consumption plus induced consumption based on disposable income**
  - $C = C_0 + c(Y - NT)$
  - $C = C_0 + c(Y - tY)$
  - **$C = C_0 + c(1 - t)Y$**

t = 0

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Effect of taxes on consumption expenditures C

A Numerical Example:

a) No taxes:

C = 20 + 0.8YD

NT = 0

YD = Y

$C_1 = 20 + 0.8Y$

b) Net tax rate t = 0.15

C = 20 + 0.8YD

NT = 0.15Y

YD = (Y – 0.15Y)

$C_2 = 20 + 0.8(Y - 0.15Y)$

a) Y	NT	YD	C_1	$\Delta C/\Delta Y$
100	0	100	100	--
300	0	300	260	(160/200) = 0.8
500	0	500	420	(160/200) = 0.8

b) Y	NT	YD	C_2	$\Delta C/\Delta Y$
100	15	85	88	--
300	45	255	224	(136/200) = 0.68
500	75	425	360	(136/200) = 0.68

- **Net tax rate changes induced consumption from $(\Delta C/\Delta Y) = cY$ to $(\Delta C/\Delta Y) = c(1 - t)Y$**

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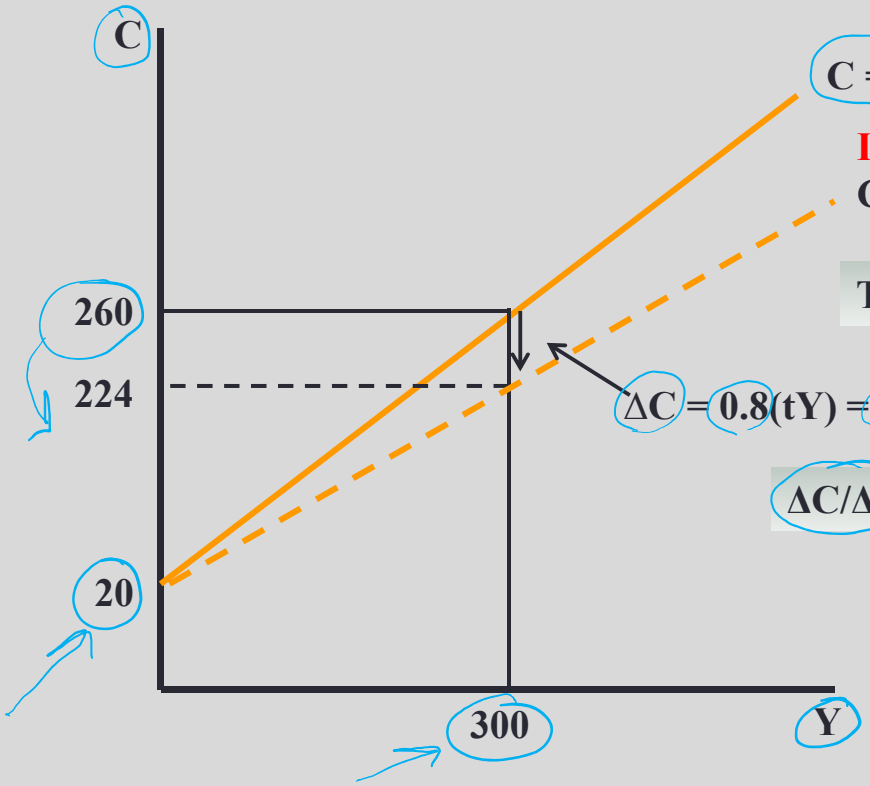
Effect of taxes on consumption expenditures C



C = 20 + 0.8Y, assuming t = 0

Increase t to t = 0.15

C = 20 + 0.68Y,

Taxes ΔC at every Y by – ctY

ΔC = 0.8(tY) = 0.8(0.15 x 300) = 36

ΔC/ΔY = MPC(1-t) = 0.8 x 0.85 = 0.68

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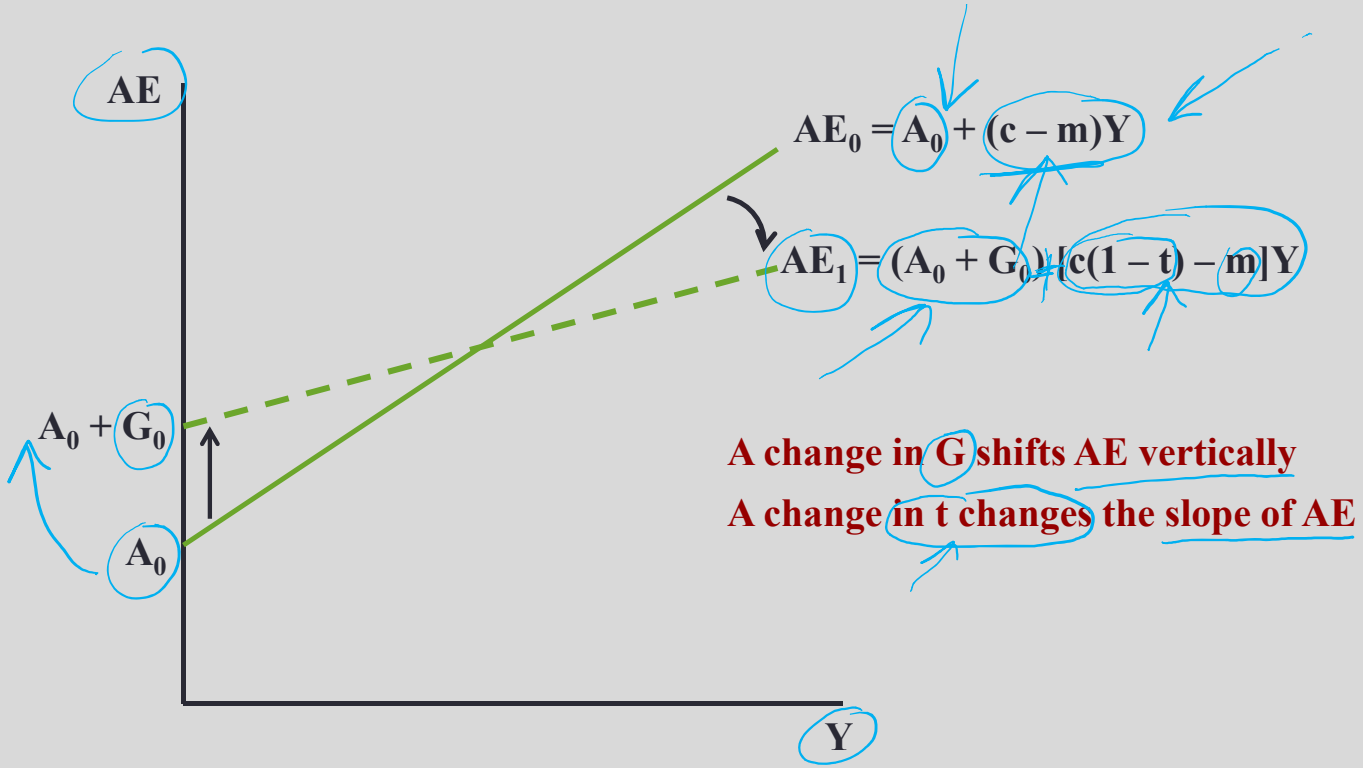
The effect of G and NT on AE

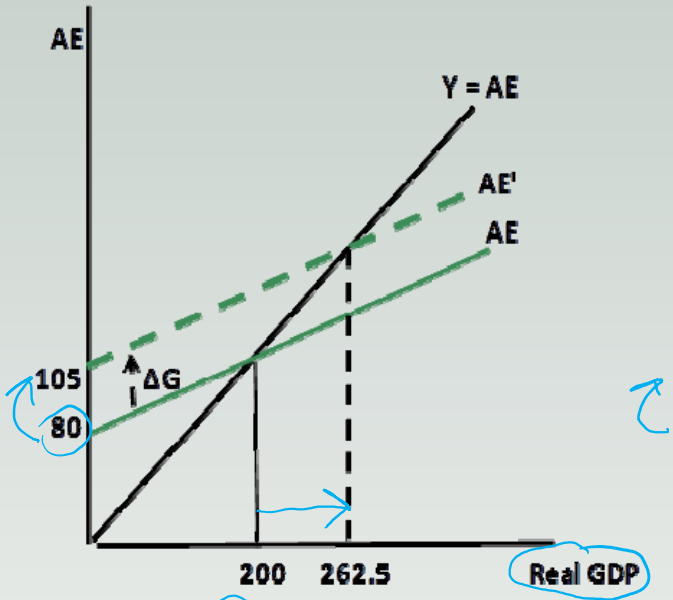


A change in G shifts AE vertically

A change in t changes the slope of AE

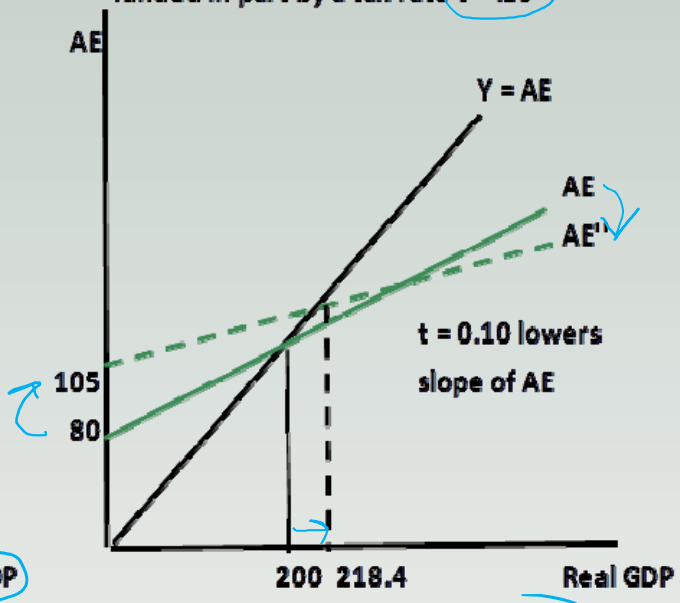
Figure 7.3 Government expenditure, taxes and equilibrium real GDP

a) Increase in government expenditure



An increase in G = 25 with a multiplier of 2.5 increases equilibrium GDP by 62.5

b) Increase in government expenditure and taxes funded in part by a tax rate t = .10



With G = 25 fund by a tax rate t = 0.10 the multiplier is reduced from 2.5 to 2.08 and equilbrium GDP is 218.4

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The Multiplier revisited:

$$\text{The multiplier} = \frac{1}{\text{1-slope of AE}}$$

$$\frac{\Delta Y}{\Delta A} = \frac{1}{1 - c(1 - t) + m}$$

- m & t reduce the slope of AE, so does lower c
- High m,t & low c → Lower AE slopes → smaller Multipliers