

IS Curve

GDP accounting

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$$Y = C + I + G + NX$$

- ▶ C : consumption expenditures
- ▶ I : investment expenditures (purchases of capital)
- ▶ G : government purchases
- ▶ NX : net exports (exports – imports)

Consumption depends on income

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$$C = C(Y) = \bar{C} + mpc \times Y$$



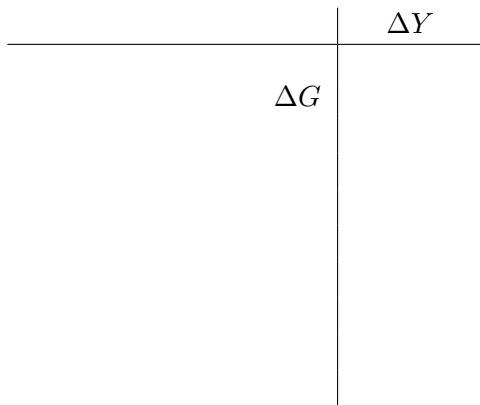
In groups

$$Y = C + I + G$$

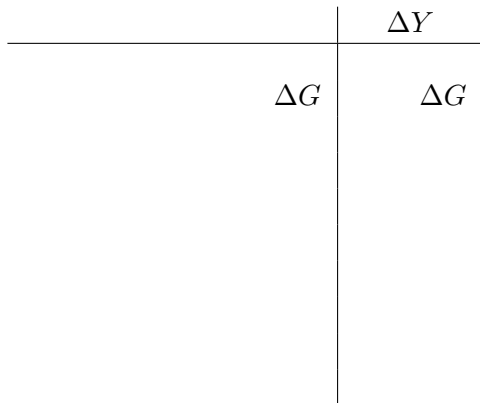
$$C = \bar{C} + mpc \times Y$$

1. Solve the two equations for Y
2. If the government buys \$100 more stuff,
 - 2.1 How much does Y increase?
 - 2.2 Calculate $\Delta Y/\Delta G$, the “government spending multiplier”
 - 2.3 Why does Y increase by more than \$100?

IS curve shift from change in G



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IS curve shift from change in G

		ΔY
	ΔG	ΔG
$\Delta C =$		

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	ΔY
$\Delta C =$	ΔG
$mpc\Delta G$	ΔG

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		ΔY
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$\Delta C =$	$mpc\Delta G$	$mpc\Delta G$
$\Delta C =$	$mpc \times mpc\Delta G$	

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		ΔY
	ΔG	ΔG
$\Delta C =$	$mpc\Delta G$	$mpc\Delta G$
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IS curve shift from change in G

	ΔY
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$\Delta C = mpc \Delta G$	$mpc \Delta G$
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$\Delta C =$	$mpc\Delta G$	$mpc\Delta G$
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$\Delta C = mpc \Delta G$	$mpc \Delta G$
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$$\text{Total: } \Delta Y = \frac{1}{1-mpc} \Delta G$$

Government behavior

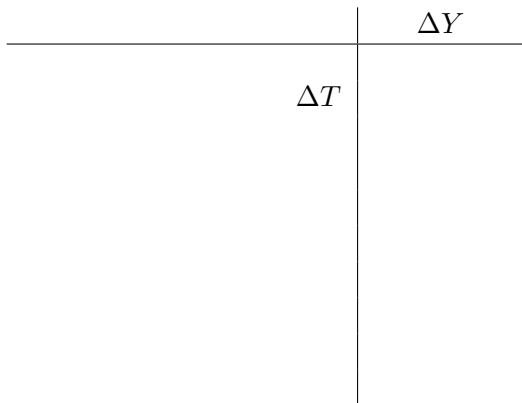
$$G = \bar{G}$$

$$T = \bar{T} - tY$$

Taxes reduce disposable income so that

$$C = \bar{C} + mpc(Y - \bar{T} - tY) = \bar{C} + mpc((1 - t)Y - \bar{T})$$

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$\Delta C =$	

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What is the opportunity cost of investment?

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- ▶ Cost of borrowing to buy capital
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Ex: $I = \bar{I} - dr$

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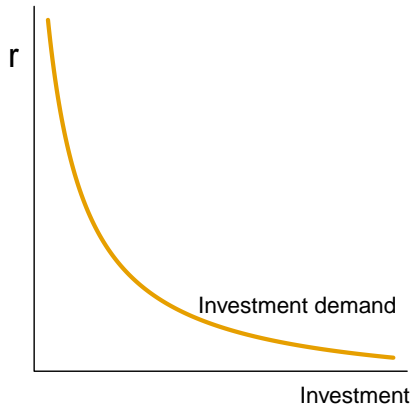
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$$\begin{aligned} Y &= C + I + G + NX \\ C &= \bar{C} + mpc((1-t)Y - \bar{T}) \\ I &= \bar{I} - dr \\ G &= \bar{G} \end{aligned} \quad \Bigg|$$

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► What is exogenous?

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$$\Rightarrow Y = \frac{1}{1 - mpc(1-t)} [\bar{C} - mpc\bar{T} + \bar{I} + \bar{G}] - \frac{d}{1 - mpc(1-t)} r$$

1. Graph the IS curve (Y on horizontal, r on vertical)
2. True or false: since an increase in income increases consumption, this will shift the IS curve up
3. Show how an increase in the marginal propensity to consume changes the slope of the IS curve.
4. What will happen to the IS curve if taxes and government spending both rise by the same amount?
5. Show what will happen to incomes if people become more confident about their future wealth and interest rates do not change. What does this tell you about a possible cause of recessions?
6. What will happen to the IS curve if the marginal product of capital increases?
7. How can you modify the IS curve to account for the fact that firms trying to finance capital purchases face costs that are higher than the Federal Funds Rate? When will this modification be most important?