

# ECONOMICS

for South African students

*Macroeconomics*

## A simple Keynesian model of the economy

### Macroeconomic theory

- Macroeconomic theory vs. measurement (national accounts)
- **Macroeconomic theory:** purpose
  - explanation
  - prediction
  - policy
- **Keynesian model:** John Maynard Keynes (“Canes”)
  - emphasis on importance of aggregate demand

## Macroeconomic equilibrium

- Total production, income and spending
- Production and income two sides of same coin
  - but will spending be equal to production and income?

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- *Three possibilities*
  - when spending  $>$  production, production (and income) will tend to increase
  - when spending  $<$  production, production (and income) will tend to decrease
  - when spending = production and income, there is equilibrium (ie. no tendency to change)

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- *In symbols*

$A > Y \rightarrow Y$  will tend to increase

$A < Y \rightarrow Y$  will tend to decrease

$A = Y \rightarrow$  equilibrium (no tendency to change)

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## Assumptions of basic model

- Households and firms only: no government or foreign sector
- Prices, wages and interest rates are given
- Spending (demand) is the driving force

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## Components of spending

$C$  = consumption spending (households)

$I$  = investment spending (firms)

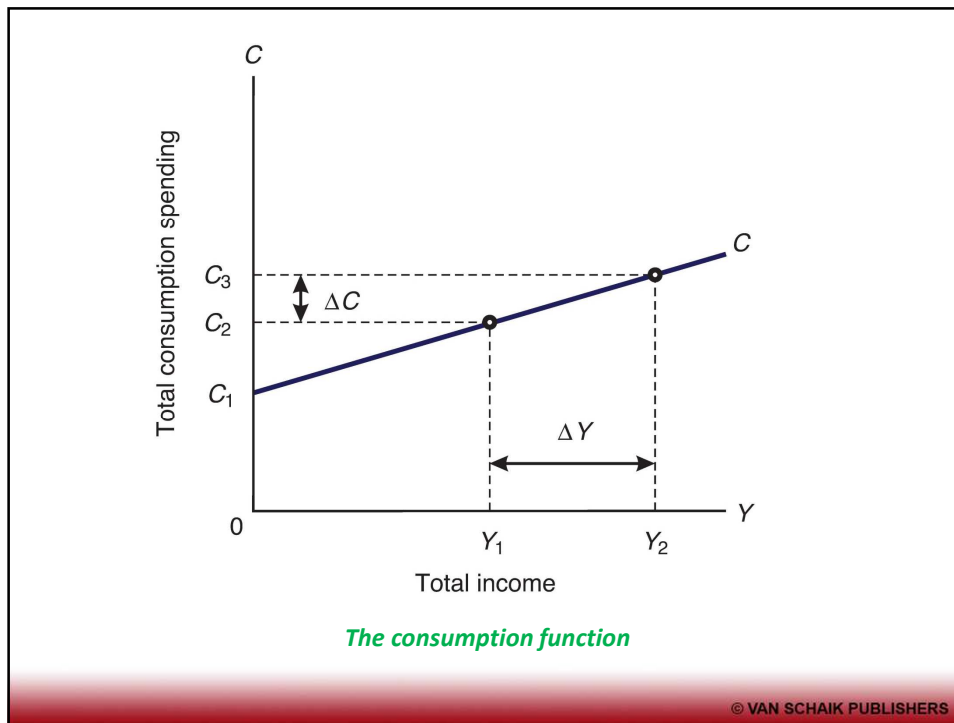
$C + I = A$  = aggregate (total) spending (expenditure)

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## Consumption function

- Relationship between consumption spending ( $C$ ) and income ( $Y$ )
- $C = f(Y)$ ; positive relationship;  $C$  increases as  $Y$  increases
- $C$  positive, even if  $Y = 0$  (due to influence of other factors that determine  $C$ )
- When  $Y$  increases,  $C$  increases, but by less than the increase in  $Y$

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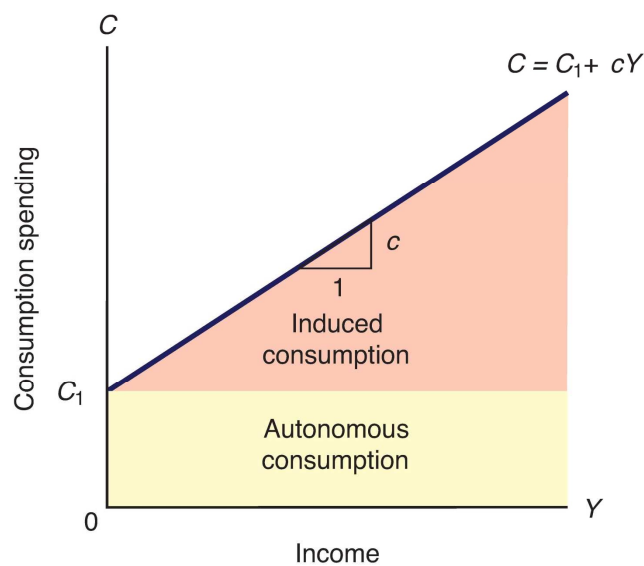
- **Autonomous C**

- independent of  $Y$
- reflected in position of  $C$  function
- position of  $C$  function determined by factors other than income (eg interest rates, wealth, expectations)

- **Induced C**

- changes as  $Y$  changes
- reflected in slope of  $C$  function
- slope equal to marginal propensity to consume ( $c$ )
- $c = \text{change in } C \text{ when } Y \text{ changes by one unit}$
- $c = \Delta C / \Delta Y = \text{slope of } C \text{ function}$

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*Autonomous and induced consumption*

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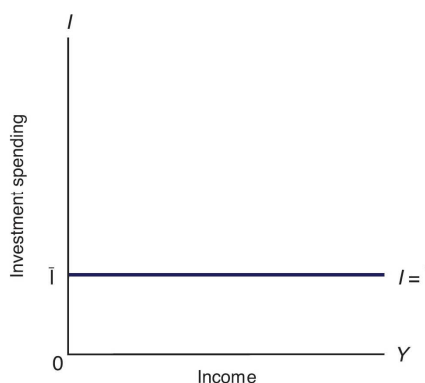
## Equation for consumption function

- $C = \bar{C} + cY$ , where
- $C$  = consumption spending by households
- $\bar{C}$  = autonomous  $C$  (not related to  $Y$ )
- $c$  = marginal propensity to consume
- $Y$  = income
- $cY$  = induced consumption

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## Investment spending ( $I$ )

- $I$  = spending on capital goods by firms
- $I$  depends on expected profitability (rather than  $Y$ )
- $I$  is thus autonomous with regard to (wrt)  $Y$
- Equation:  
 $I = \bar{I}$  (autonomous wrt  $Y$ )



*Investment and the level of income*

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## Aggregate spending (A)

- A represents total or aggregate demand in the economy
- $A = C + I$

*The aggregate spending function*

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## The basic Keynesian model

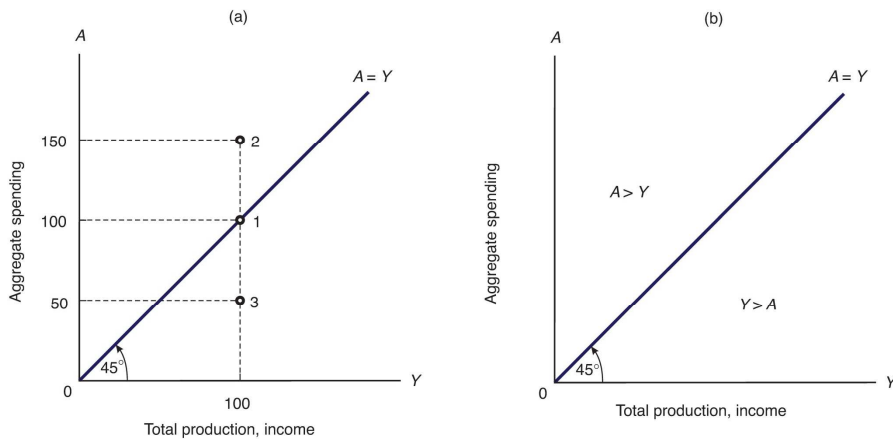
$$\begin{aligned}A &= C + I \\C &= \bar{C} + cY \\I &= \bar{I}\end{aligned}$$

- Equilibrium where  $Y = A$

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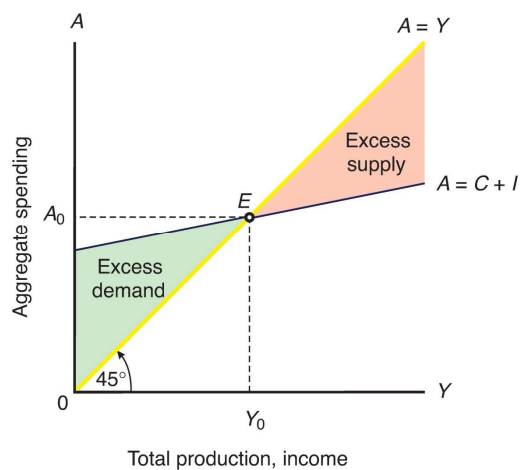
- $45^\circ$  line represents all possible equilibrium points



*The 45-degree line*

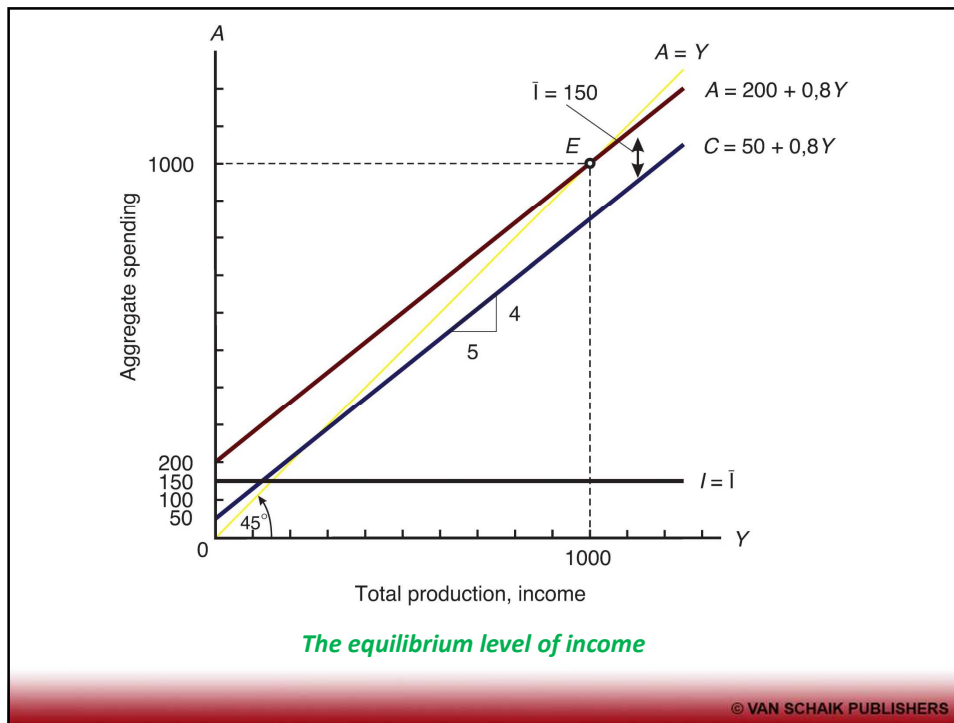
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- Equilibrium illustrated where  $Y = A$ , ie where  $A$  intersects  $45^\circ$  line



*The equilibrium level of income*

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## Equilibrium level of income

- Equilibrium where  $Y = A$

$$A = C + I$$

$$C = \bar{C} + cY$$

$$I = \bar{I}$$

$$\begin{aligned} Y = C + I &= \bar{C} + cY + \bar{I} \\ &= \bar{C} + \bar{I} + cY \end{aligned}$$

$$\dots Y - cY = \bar{C} + \bar{I}$$

$$Y(1-c) = \bar{C} + \bar{I}$$

$$Y = (1/1-c) (\bar{C} + \bar{I}) \text{ (equilibrium level of } Y)$$

$$= \alpha \bar{A}, \text{ where}$$

$$\alpha = 1/1-c \text{ (the multiplier)}$$

$$\bar{A} = \bar{C} + \bar{I} \text{ (autonomous spending)}$$

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## Equilibrium: numerical example

- Suppose  $C = 500 + 0,8Y$  and  $I = 300$

- At equilibrium:  $Y = A$

$$Y = C + I$$

$$= 500 + 0,8Y + 300$$

$$= 0,8Y + 800$$

$$Y - 0,8Y = 800$$

$$0,2Y = 800$$

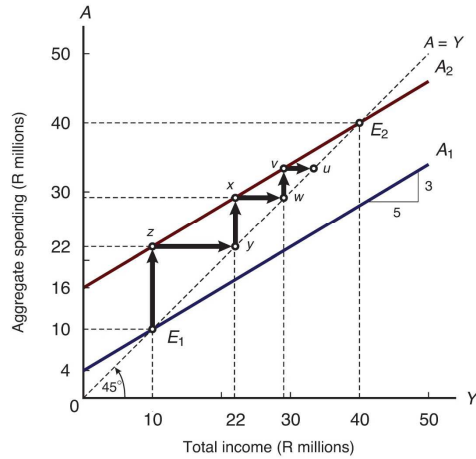
$$0,2Y = 800$$

$$Y = 800/0,2$$

$$= 4000$$

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# The impact of a change in investment spending: the multiplier



The multiplier process

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Round number	Additional spending and income in this round (R millions)	Cumulative total (R millions)
1	12,0	12,0
2	7,2	19,2
3	4,32	23,52
4	2,592	26,112
5	1,5552	27,6672
6	0,93312	28,60032
7	0,559872	29,160192
8	0,3359232	29,4961152
9	0,2015539	29,6976691
...	...	...
...	...	...
n	...	30,0

The multiplier chain of spending and income

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