



EE 212 PRINCIPLES OF MACROECONOMICS (SECTION 046402)

Lecture #7

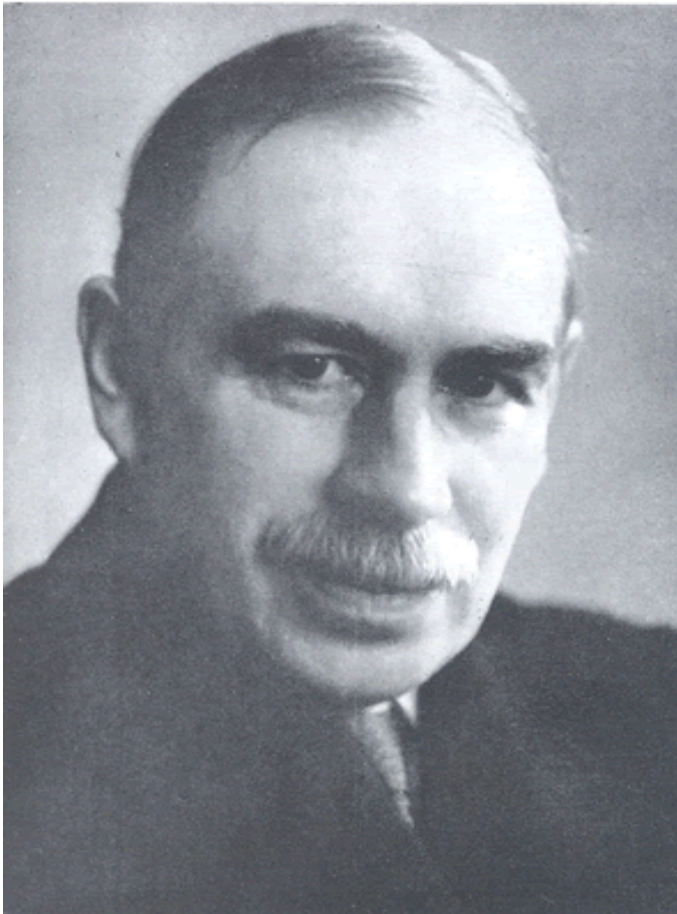
7 February 2012

Dr.Nattapong Puttanapong

3

Desired Aggregate Expenditure (DAE) and Equilibrium National Income

Who are they?



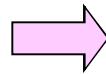
John Maynard Keynes



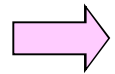
Milton Friedman

3.1 Introduction

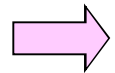
John Maynard Keynes



The General Theory of Employment, Money, and Interest

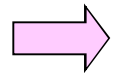


Desired Aggregate Expenditure (DAE)

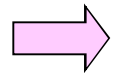


Actual Expenditure

- In the economy without government and foreign sector

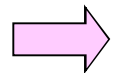


Desired Aggregate Expenditure (DAE) =

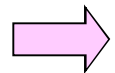


Actual Aggregate Expenditure =

- Desired vs. Actual concept



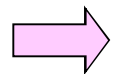
Actual Consumption vs. Desired Consumption



Actual Investment vs. Desired Investment

3.1 Introduction

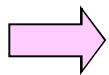
Actual Investment vs. Desired Investment (Planned Investment)



Investment in building, machine

❖ **Planned B&M investment** (Intend to build factory or buy machine)

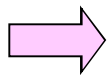
❖ **Unplanned B&M investment** (eg. B&M bought b/c of shock in sales)



**Inventory
investment**

Planned inventory investment

Unplanned inventory investment



Actual Investment =

3.2 Composition of DAE

In the economy with government and foreign sector

$$\text{DAE} = \text{Desired } (C + I + G + X - M)$$

- Desired aggregate **consumption**
- Desired aggregate **investment**
- Desired aggregate **government expenditure**
- Desired aggregate **net export**

3.2.1 Desired aggregate consumption

Factors determining aggregate C

- Disposable Income (Y^d)
- Consumption loan

Low interest rate for consumption loan

Low down payment for consumption loan

- Population amount

Amount of population

3.2.1 Desired aggregate consumption

Factors determining aggregate C

- **Consumer expectation**

Expect future income to

- **Consumer taste**

Expect price of G&S to

Keynes consumption theory

- Main factor determining C is Y^d
- Consumption Function

$$C = f(Y^d, A1, A2, A3, \dots)$$

Consumption Function

$$C = C_a + bY^d$$

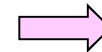
$$C = f(Y^d)$$

$$C = 100 + 0.6Y^d$$

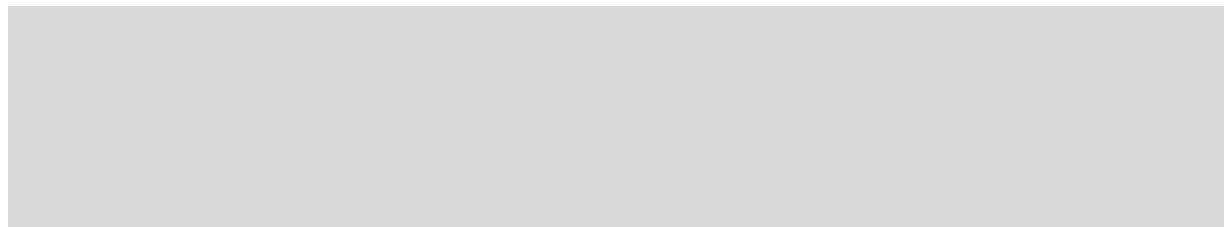
APC = Average Propensity to Consume



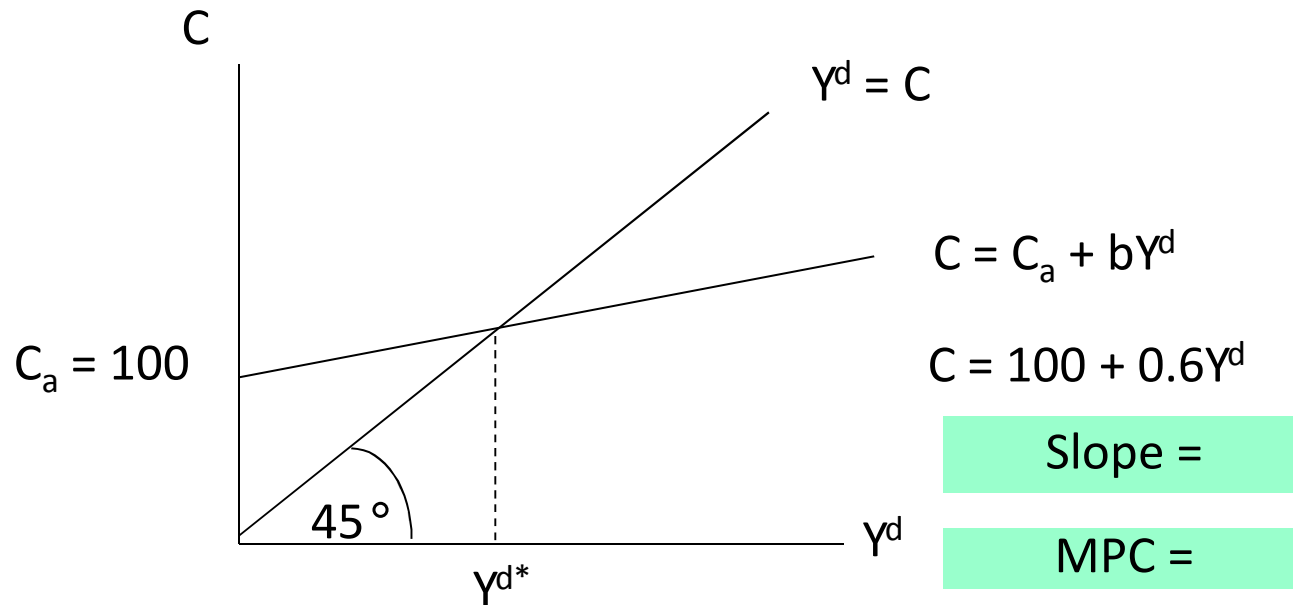
MPC = Marginal Propensity to Consume



MPC < 1



Consumption Graph



Break-even Income

Note:

1) $Y^d \rightarrow C$

2) $Y^d \rightarrow$

3) $Y^d \rightarrow \left[\frac{C}{Y^d} \right]$

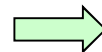
or

From consumption graph

- At point $Y^d = C$

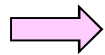
$$C = 100 + 0.6Y^d$$

$$C = 100 + 0.6C$$



From consumption graph

$$Y^d = 0$$



$$C = C_a = 100$$

$$0 < Y^d < Y^{d*}$$



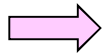
$$C > Y^d$$

$$Y^d > Y^{d*}$$



$$C < Y^d$$

$$Y^d = Y^{d*}$$



$$C = Y^d$$

Saving

Find **saving function** from consumption function

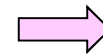
$$Y^d = C + S$$

$$C = C_a + bY^d$$

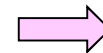
$$S = Y^d - C$$

$$C = 100 + 0.6Y^d$$

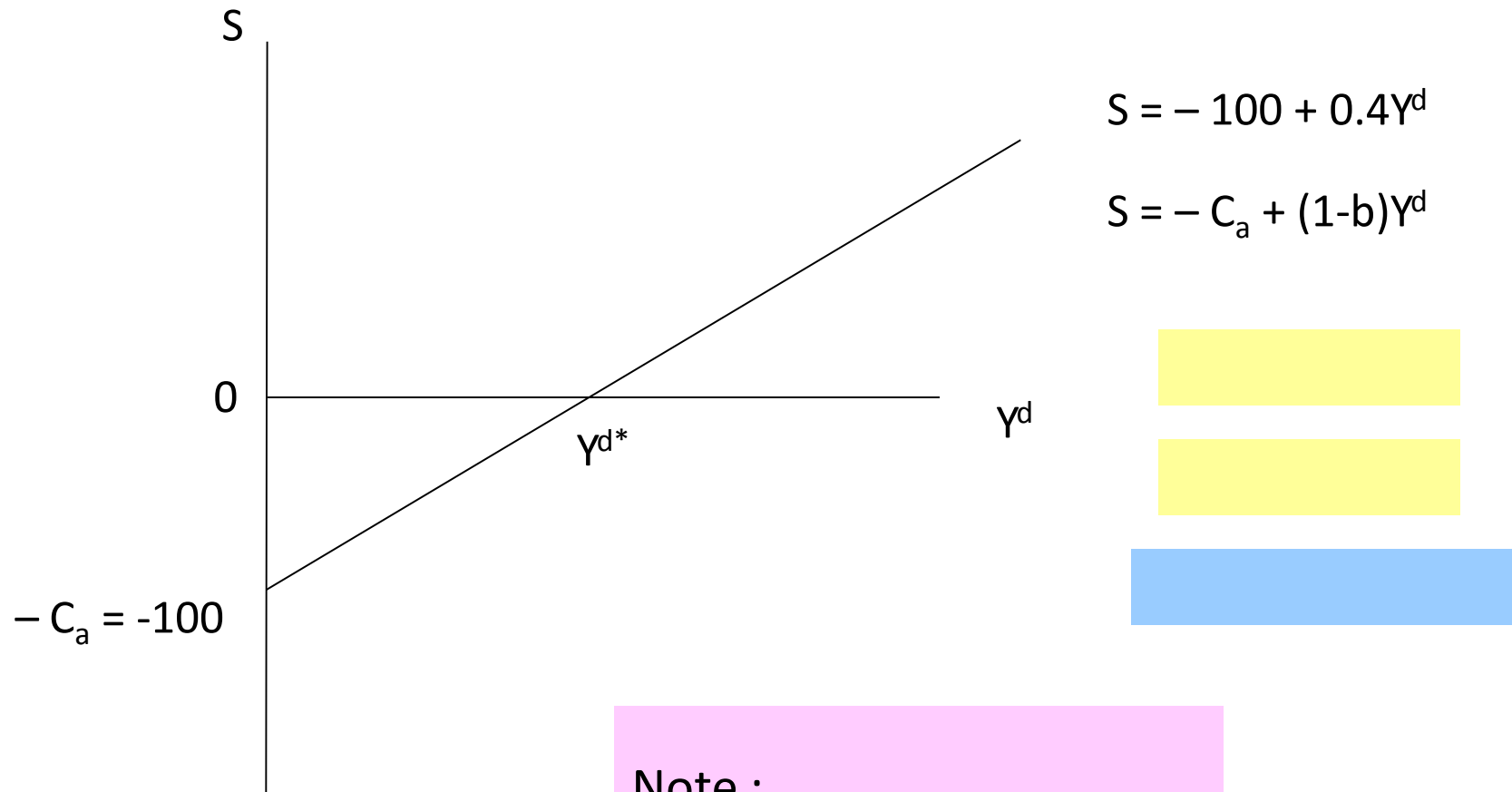
APS = Average Propensity to Save



MPS = Marginal Propensity to Save



Saving and Disposable Income



Factors affecting saving

- Disposable Income (Y^d) , $Y^d \uparrow \rightarrow$

- Interest rate

Interest rate for deposit $\uparrow$



- Consumer expectation

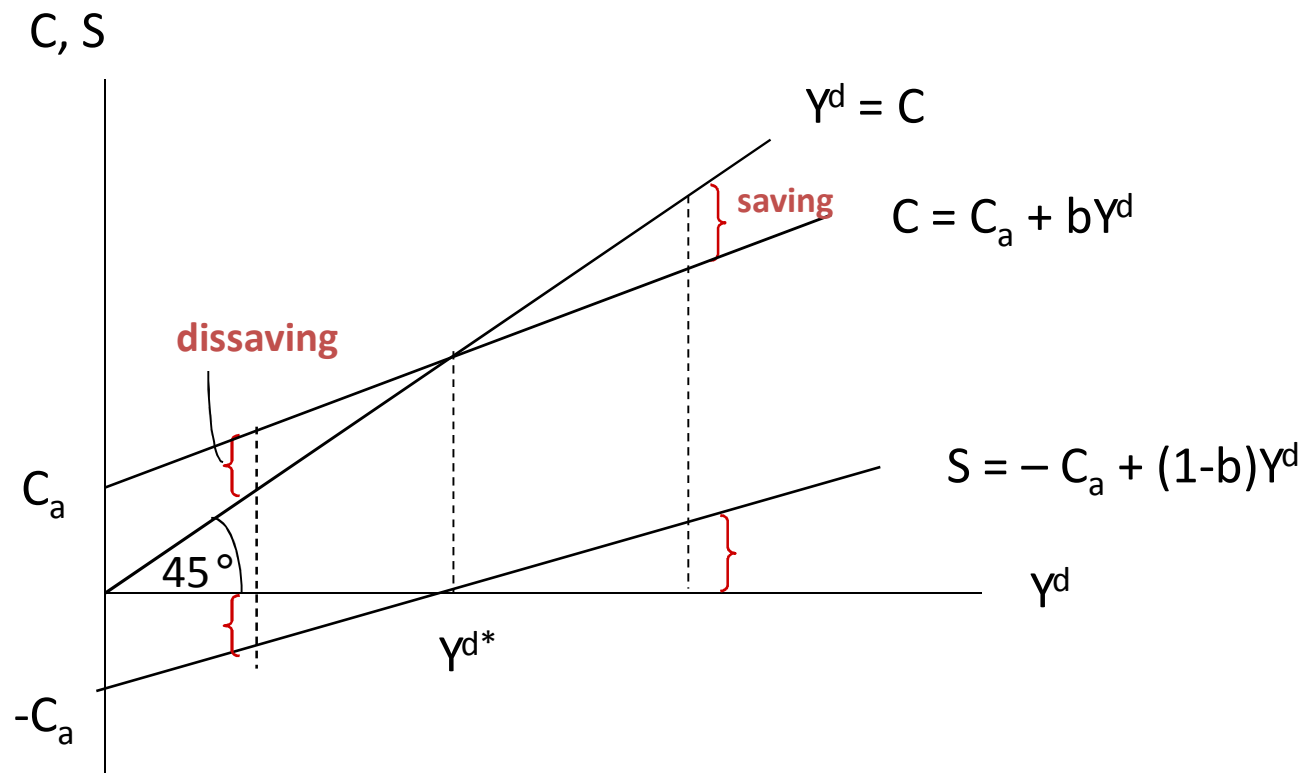
Expect future income to $\downarrow$



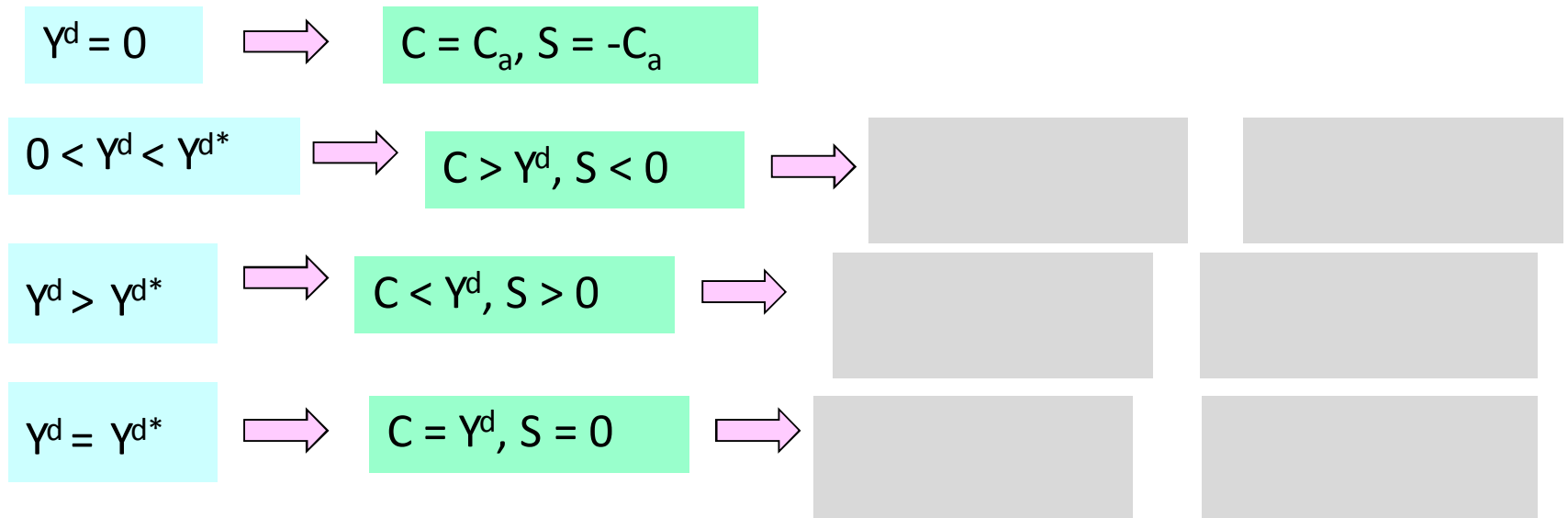
Consumption and Saving

$$C = C_a + bY^d$$

$$S = -C_a + (1-b)Y^d$$

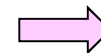


From graph of Consumption and Saving



- From $Y^d = C + S$

Divide both sides by
 Y^d

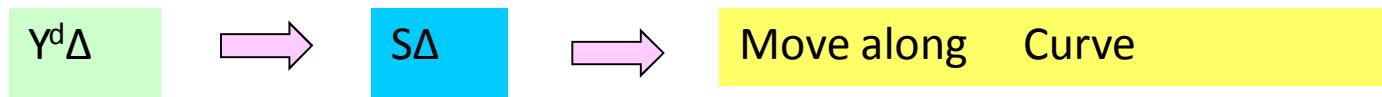
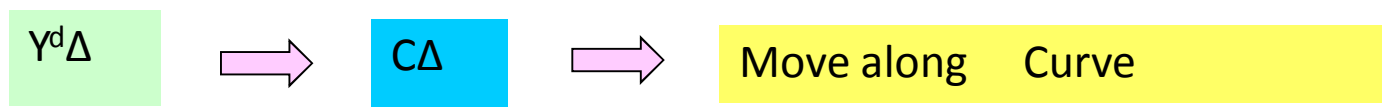


from $\Delta Y^d = \Delta C + \Delta S$

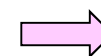
Divide both sides by
 ΔY^d



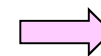
Move Along **VS.** Shift in **Consumption** and **Saving** curve



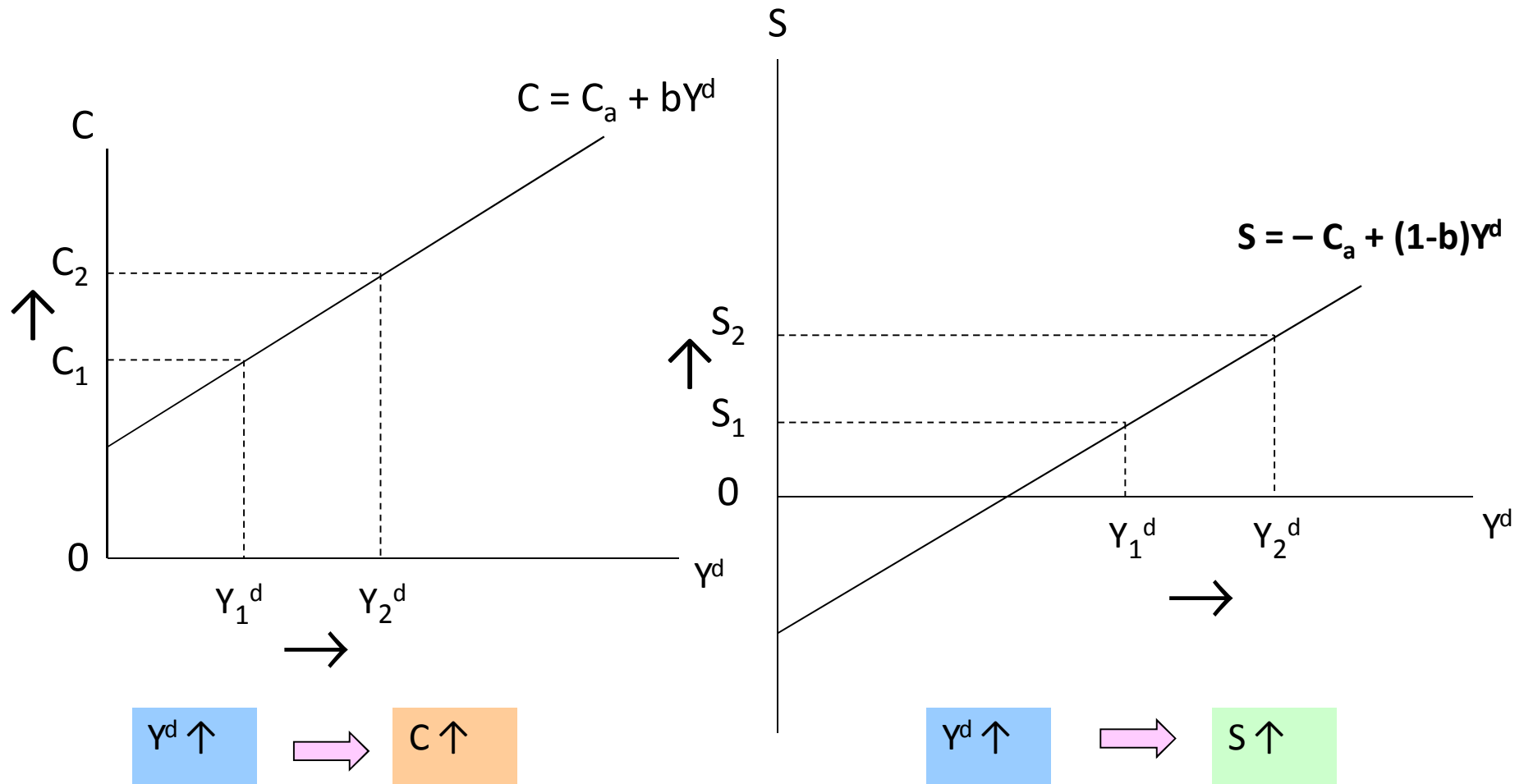
Change in any factors (except Y^d) affecting **C**



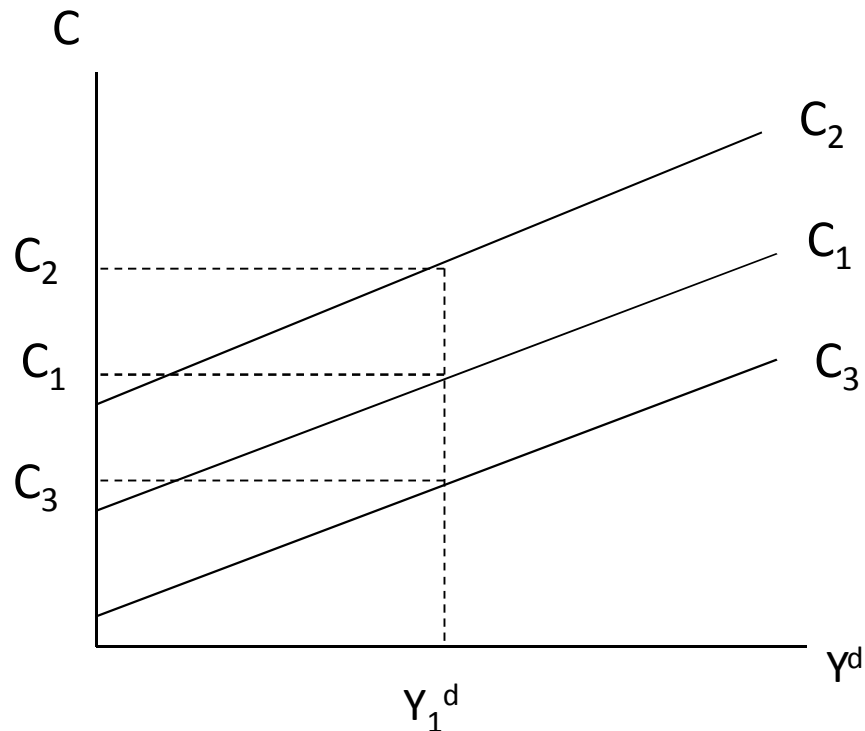
Change in any factors (except Y^d) affecting **S**



Example **Move Along** the Curve

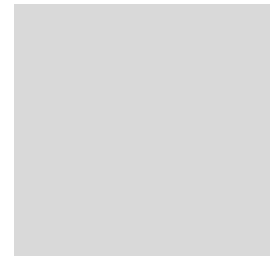


Example **Shift** the Curve

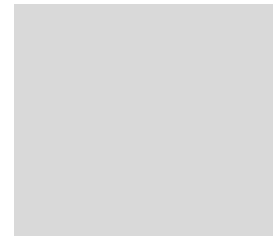


At level of disposable income Y_1^d

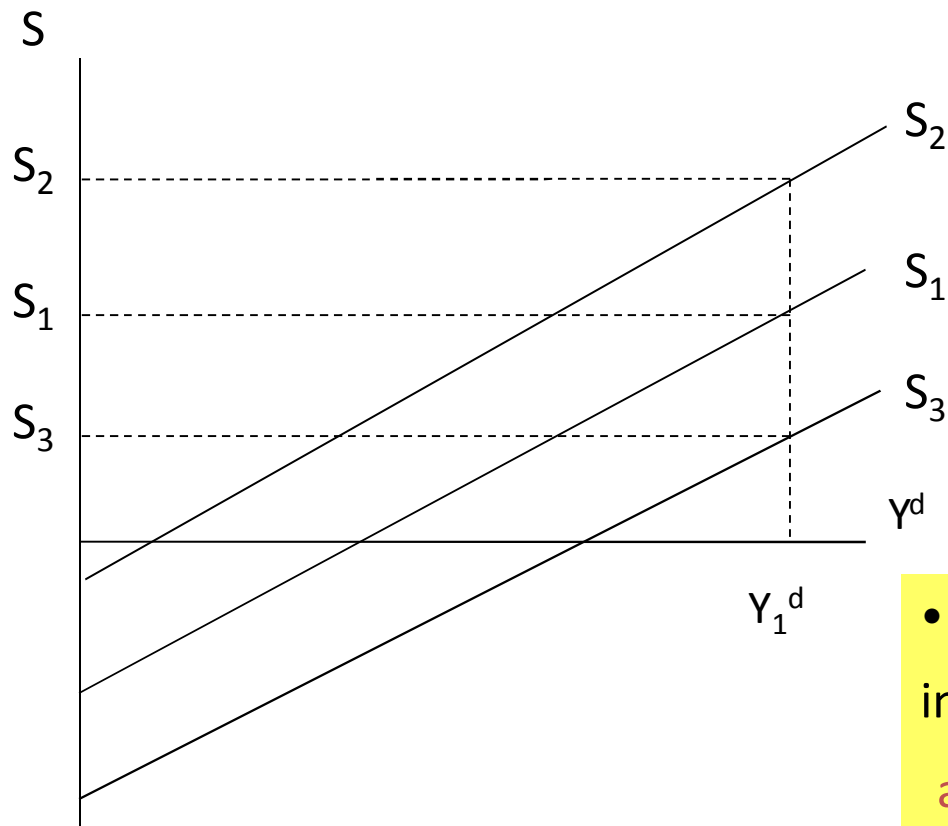
- If interest rate for consumption loan $\downarrow$:
at the same level of disposable income Y_1^d



- If expected disposable income (Y_E^d) $\downarrow$:
at the same level of disposable income Y_1^d



Example **Shift** the Curve



At level of disposable income Y_1^d

- If interest rate for consumption loan $\downarrow$
at the same level of disposable income Y_1^d

$S \downarrow$ from S_1 to S_3

- If expected disposable income (Y_E^d) $\downarrow$
at the same level of disposable income Y_1^d

$S \uparrow$ from S_1 to S_2

Summarize Consumption Theory

Consumption Theory under Various Hypotheses

- Absolute Income Hypothesis
(Keynes Consumption Theory)
- Permanent Income Hypothesis
- Life Cycle Hypothesis

Consumption Theory under Permanent Income Hypothesis

➤ Developed by Milton Friedman

➤ Assumption

- ❑ Income (Y) can come from
 - Permanent Income (Y^p)
 - Temporary Income (Y^t)

- ❑ Consumption can come from
 - Permanent Consumption (C^p)
 - Temporary Consumption (C^t)

$$Y = Y^p + Y^t$$

$$C = C^p + C^t$$

Consumption Theory under Permanent Income Hypothesis

➤ Assumption (continued)

- ❑ Permanent Consumption (C^p) is a proportion of Permanent Income (Y^p)

$$C^p = kY^p$$

$$\text{Where } k = MPC_p$$

- ❑ Temporary Income (Y^t) is not correlated with Permanent Income (Y^p)
- ❑ Temporary Consumption (C^t) is not correlated with Permanent Consumption (C^p)
- ❑ Temporary Consumption (C^t) is not correlated with Temporary Income (Y^t)

$$\text{That is } MPC_t = 0$$

Consumption Theory under Permanent Income Hypothesis

➤ Important concept

Consumption does not depend current income, but depends on the permanent income

Consumption Theory under Permanent Income Hypothesis

➤ Long-run Consumption

$$C^{LR} = C^p = kY^p$$

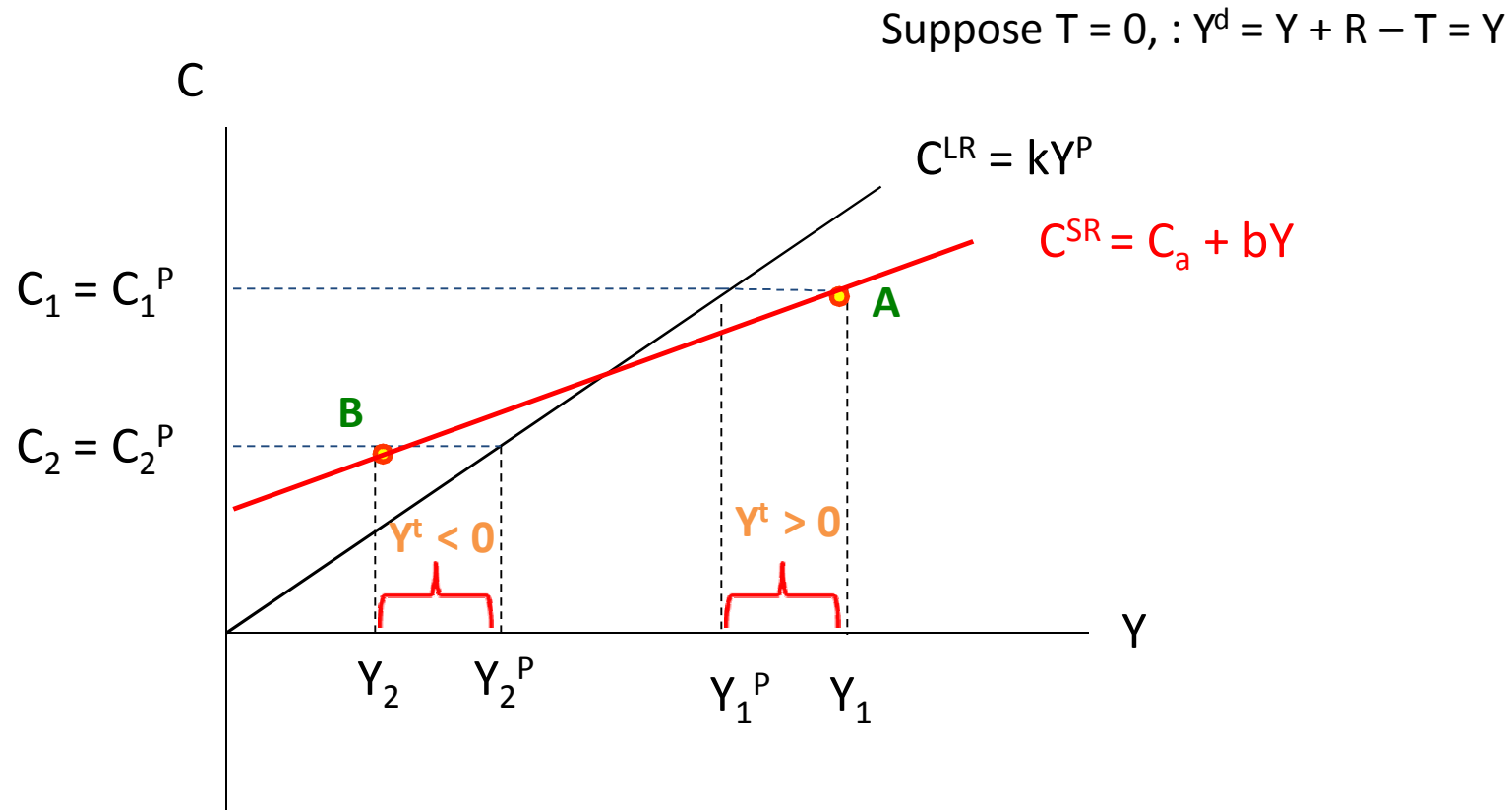
➤ Short-run Consumption

$$APC = MPC = k$$

$$C^{SR} = C_a + bY$$

$$APC > MPC$$

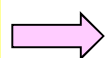
Consumption Theory under Permanent Income Hypothesis



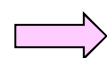
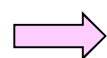
Consumption Theory under Permanent Income Hypothesis

In short-run, income can vary around the long run trend

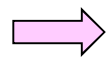
Boom
period



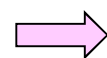
$$Y=Y_1$$



At Y_1^p : Consumption = C_1^p



Therefore; at Y_1 : Consumption = C_1

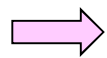


Point A

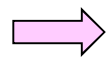
Recession
period



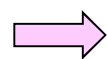
$$Y=Y_2$$



At Y_2^p : Consumption = C_2^p



Therefore; at Y_2 : Consumption = C_2



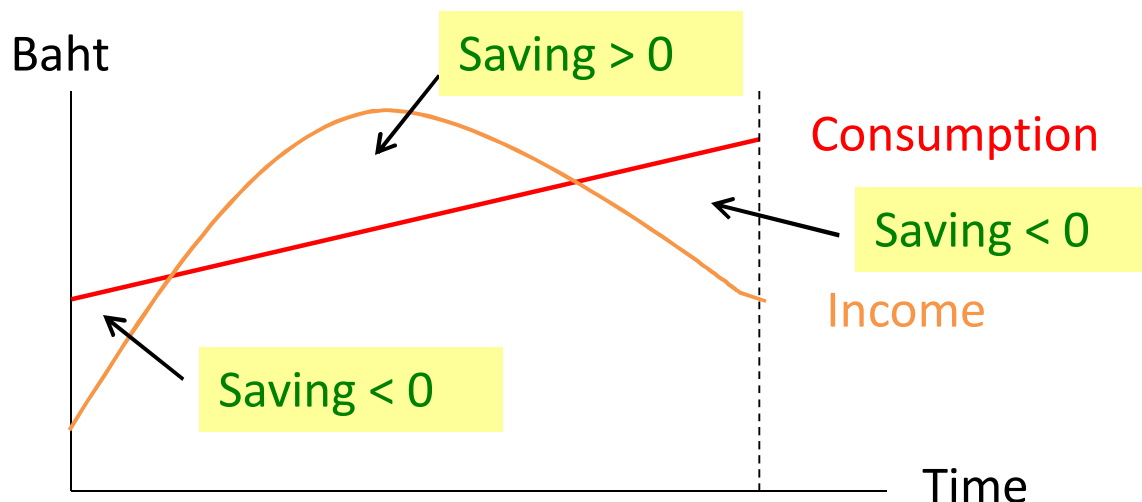
Point B

Draw line between point A and Point B, we will get C^{SR} line

Where $C^{SR} = C_a + bY^d$

Consumption Theory under Life Cycle Hypothesis

- Developed by Albert Ando and Franco Modigliani
- Assumption
 - ❑ Income life cycle is normally as follows



At young age
and retired age



Low income



Consumption > Income



At working age



high income



Consumption < Income



Consumption Theory under Life Cycle Hypothesis

➤ Important concept

Consumption does not depend current income, but depends on present value of lifetime income

Consumption Theory under Life Cycle Hypothesis

Present Value of lifetime Income

Let n = number of years you will live from now on

Y_t = income at year t

r = real interest rate

PV = present value of lifetime income

Consumption Theory under Life Cycle Hypothesis

Year 0  Y_0

Year 1  $Y_1 = Y_0 + Y_0(r)$

$$= Y_0 (1+r)$$

$$Y_0 = \frac{Y_1}{(1+r)}$$



Present Value of Y_1 $= \frac{Y_1}{(1+r)}$

Consumption Theory under Life Cycle Hypothesis

Year 2  $Y_2 = Y_1 + Y_1(r)$

$$= Y_1 (1+r)$$
$$= Y_0 (1+r) (1+r)$$
$$= Y_0 (1+r)^2$$

 $Y_0 = \frac{Y_2}{(1+r)^2}$

Present Value of Y_2 $= \frac{Y_2}{(1+r)^2}$

Consumption Theory under Life Cycle Hypothesis

Present Value of life time income

$$= (\text{PV of } Y_1) + (\text{PV of } Y_2) + \dots + (\text{PV of } Y_n)$$

$$= \frac{Y_1}{(1+r)} + \frac{Y_2}{(1+r)^2} + \dots + \frac{Y_n}{(1+r)^n}$$

$$= \sum_{t=1}^n \frac{Y_t}{(1+r)^t}$$

Consumption Theory under Life Cycle Hypothesis

Present Value of lifetime Income

$$PV \text{ of life time income} = \frac{Y_1}{1+r} + \frac{Y_2}{(1+r)^2} + \frac{Y_3}{(1+r)^3} + \dots + \frac{Y_n}{(1+r)^n}$$

$$PV \text{ of life time income} = \sum_{t=1}^n \frac{Y_t}{(1+r)^t}$$

Consumption at year t depends on present value of lifetime income

Consumption Theory under Life Cycle Hypothesis

➤ Example, suppose

- ❑ Income can be divided to
 - income from asset (W)
 - income from labor (Y)
- ❑ People can live for n years
- ❑ People will get income out of work Y Baht per year, and they will earn those income for m years
- ❑ Consumption (C) pattern is as follows

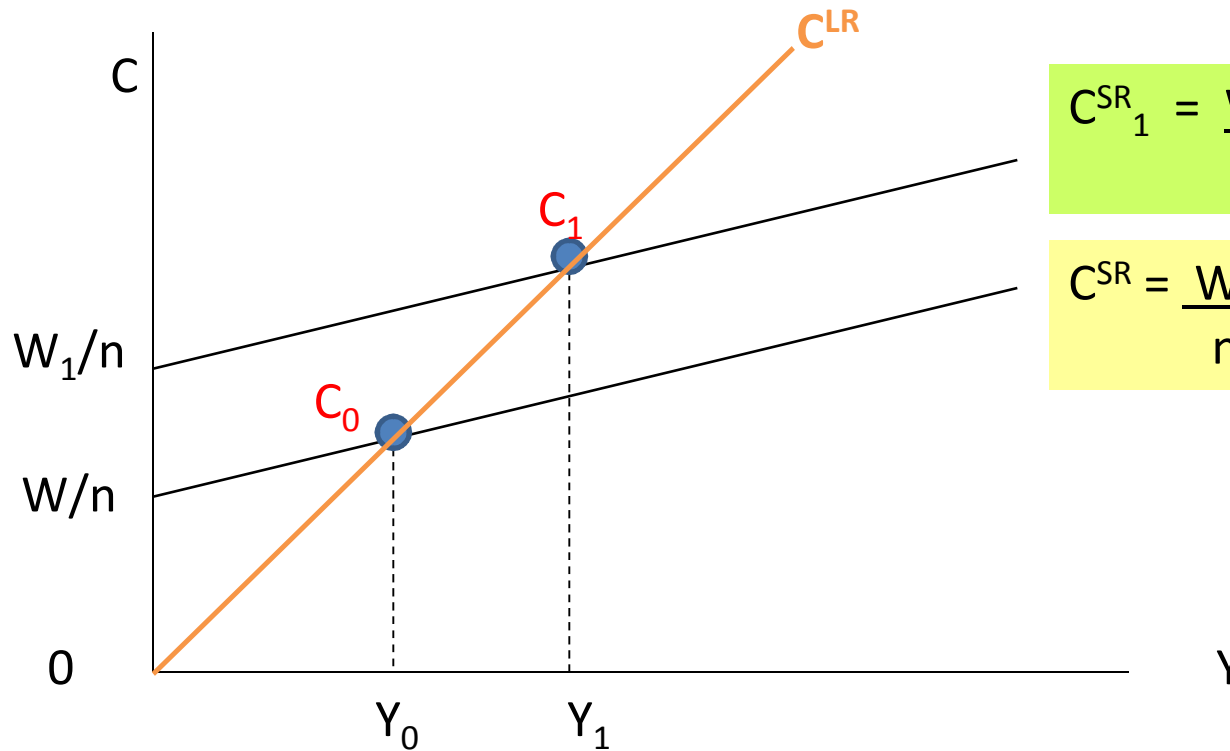
$$C = \frac{W + mY}{n}$$



$$C = \frac{W}{n} + \frac{m}{n}Y$$

Consumption Theory under Life Cycle Hypothesis

$$C^{SR} = \frac{W}{n} + \frac{m}{n} Y$$



$$C^{SR}_1 = \frac{W_1}{n} + \frac{m}{n} Y$$

$$C^{SR} = \frac{W}{n} + \frac{m}{n} Y$$

When we
accumulate
wealth



C^{SR} shift from
 C^{SR} to C^{SR}_1

