HUMAN RESOURCE ECONOMICS

962 362

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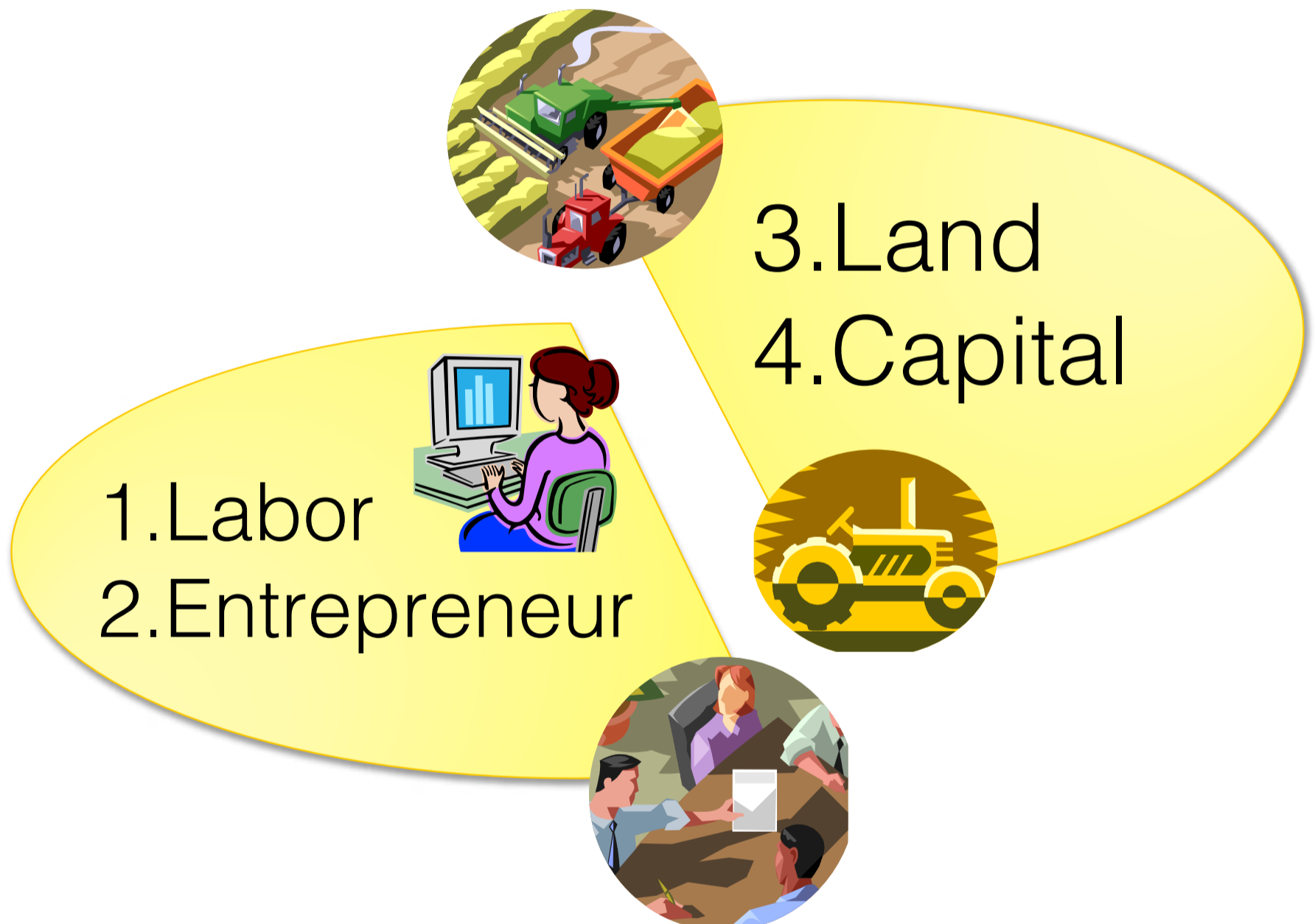
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Chapter 1 Introduction

3.Land
4.Capital

1.Labor
2.Entrepreneur

Economics factors comprise of land, capital, labor, and entrepreneur

1.1 Definition of Human Resource

Labor → Wage

Entrepreneur → Profits

Labor → Supply of Labor → MP_L = Wage → Income

Entrepreneur → Demand for Labor → Cost of Production → Profit

GDP = C+I+G+(X-M)

Economic Cycle

Cost of Production — Wage

Labor Market

Entrepreneur

Marginal Product of Labor

Labor

Commodities — Services

Commodities Market

Revenue — Expenditure
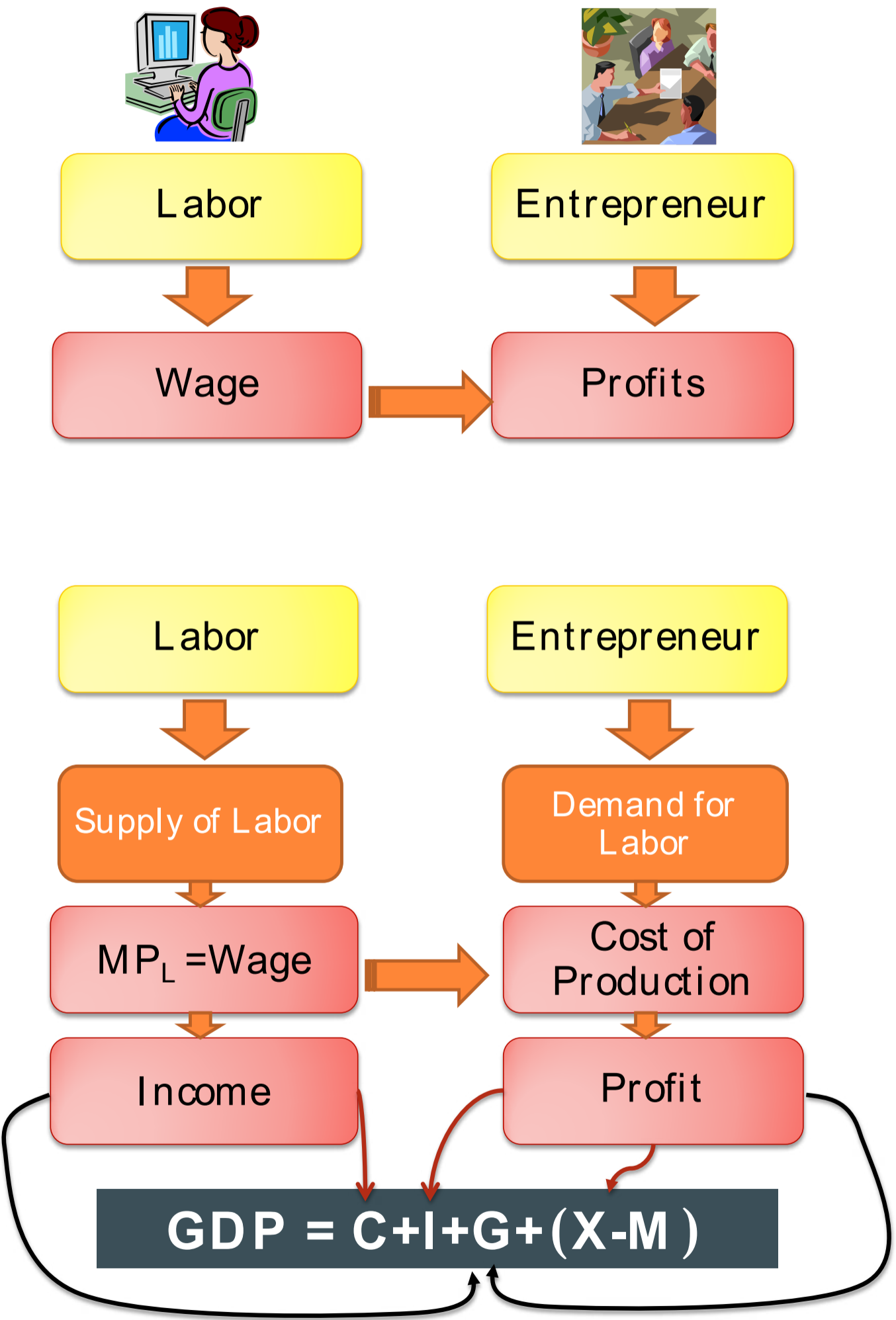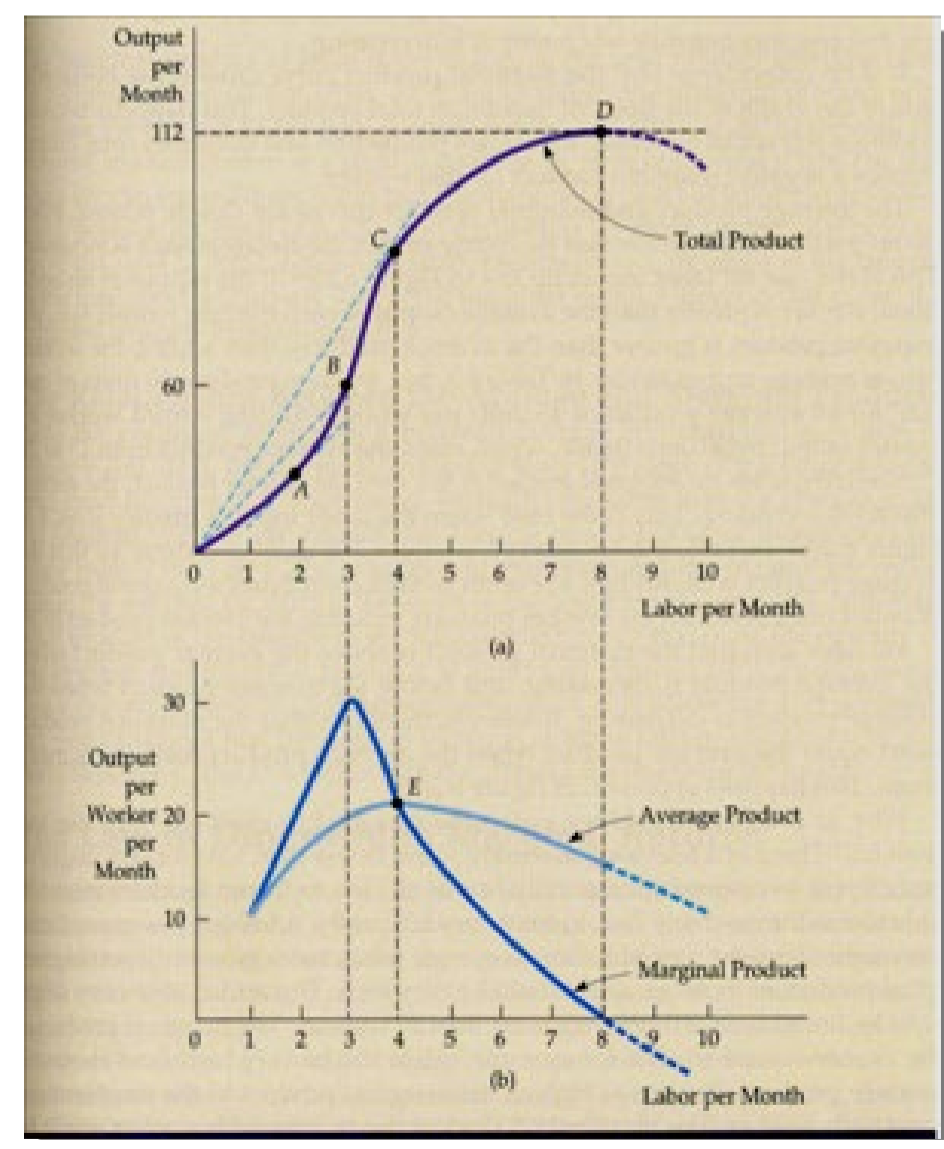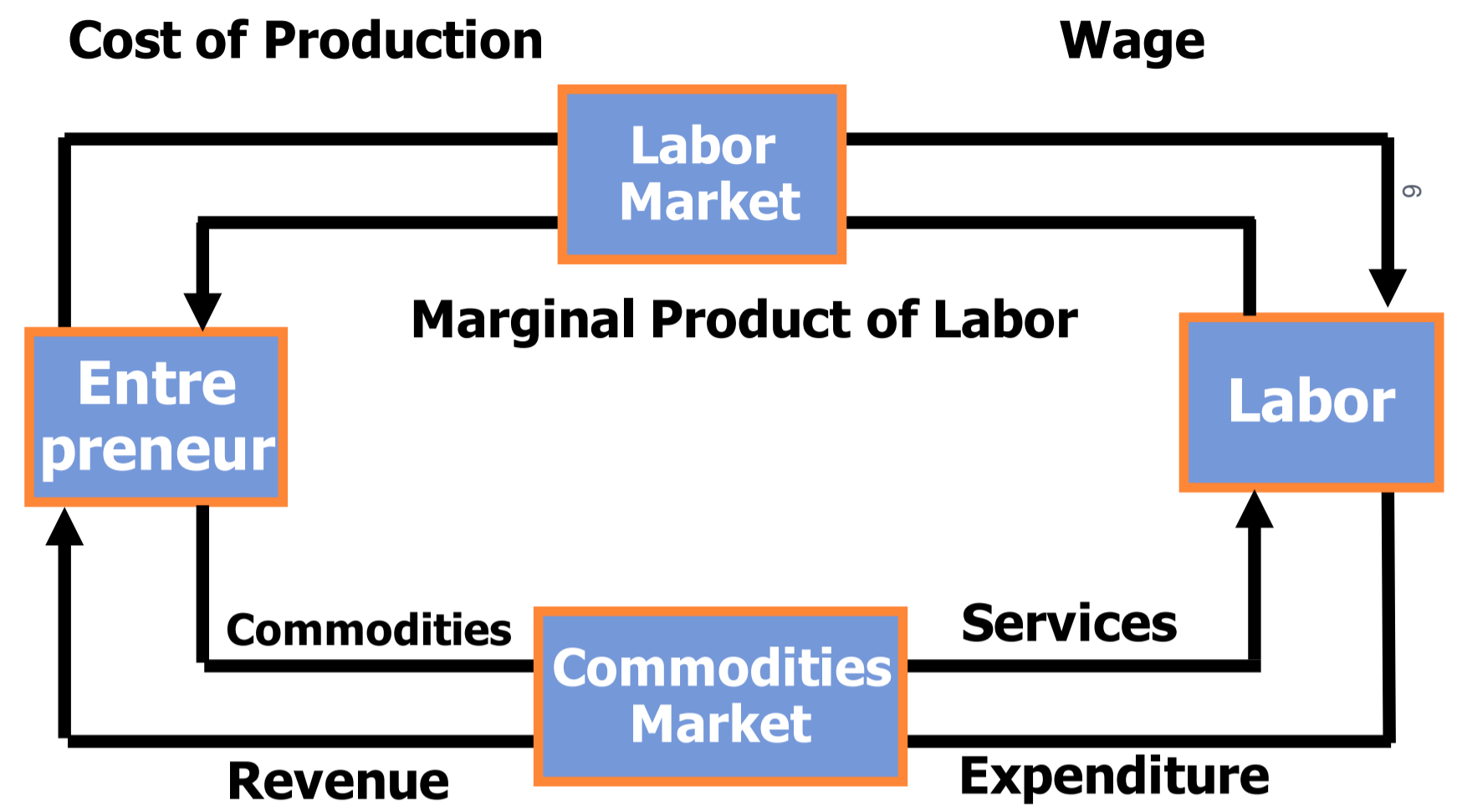
Production Function
- Y = f(K,L)
- K is Capital
- L is Labor

How to increase productivity of labor?

Can We Create Labor Competency or Capability?

□ Yes we can!

□ If you need to gain something you have to invest something.

□ If you need to earn more you have to invest in human call "Human Capital"(HC).

□ Invest in human capital rather than in equipment and IT.

□ Is HC defined as an investment or consumption?

□ How can we measure return on HC investment?

1.2 Concept of Human Capital (HC)

■ Adam Smith (1737) stated that human as a capital comprise both loss with investment and gain profits.

■ Jean Baptiste Say(1821) addressed that we have to invest for skills and abilities. We can enhance worker's ability by increase their skills.

■ William Farr (1853) agree with Sir William Petty's concept that talk about capital taxation. He explained that human as a capital or asset. HC can calculate return by future income, then worker should pay for income tax.

Assignment:

■ Find any other definitions for "Human Capital" (At least 3 persons)

■ Submit 7 November 2012 (5 score)

HC (continued)

■ Theodore Wittstein(1867) definded human as a capital stock. Life earning can calculate by education expense and life maintenances so it could increase if worker's age increase.

■ Sir Robert Giffen(1880) tried to evaluated the economic lost form France war.

■ Friedrich Kapp(1870) also evaluated some of worker who migrated to USA. as a capital stock(without depreciation and maintenance).

■ However, Charles L. Brace argue that not only calculate human with one side(supply of labor) but also demand for labor.

■ Likewise Friedrich Kapp(1870), Ernst Engel(1883) also further calculate HC by including parents expenditure or other word, investment from family.

Concept of Human Capital

Earnings
Wage+Other
Income

Cost
Education+others

Migration

Health

Education &Training
(School &Organization)

Endowment (Family)

Ability

Non-cognitive skills
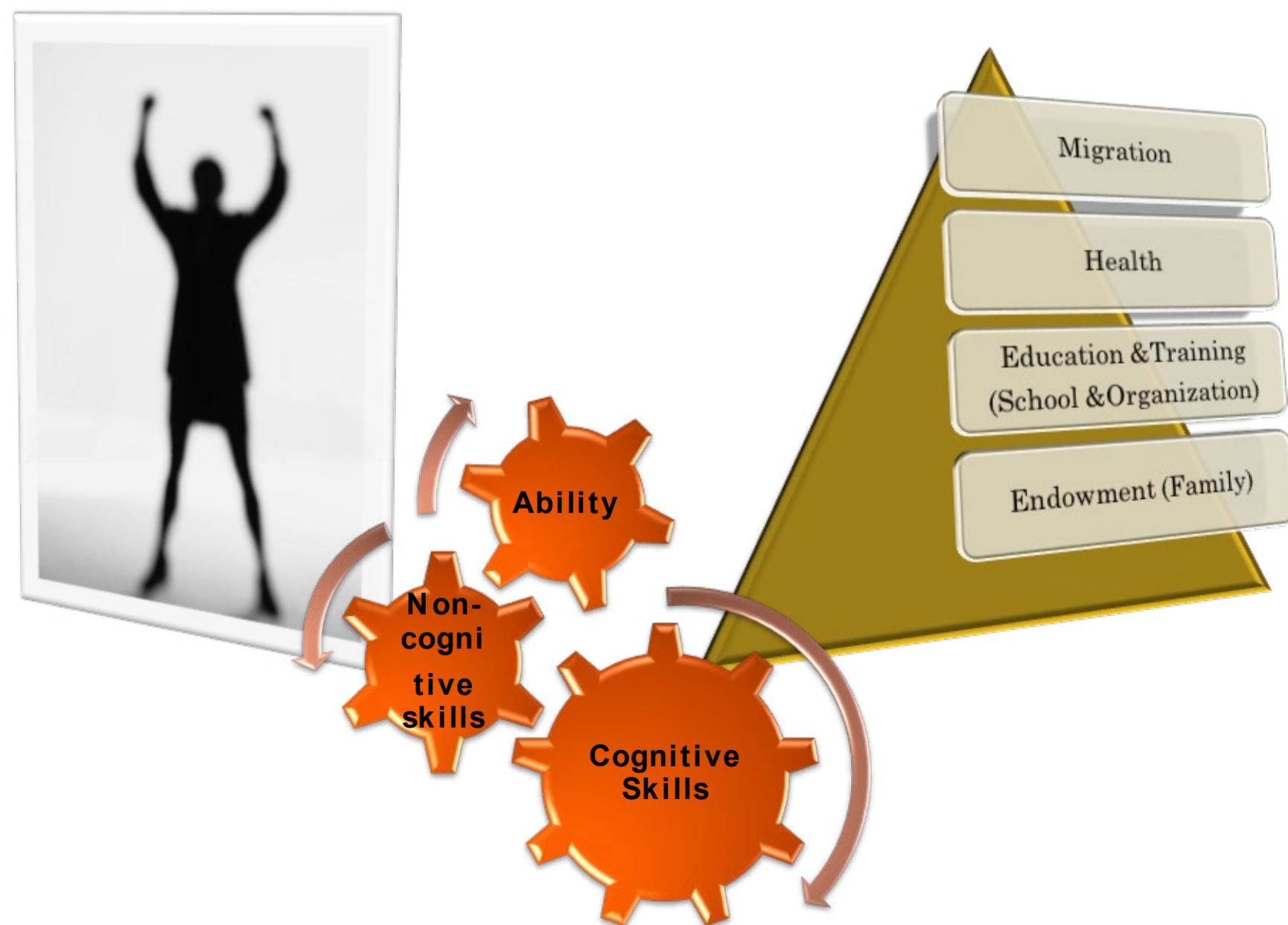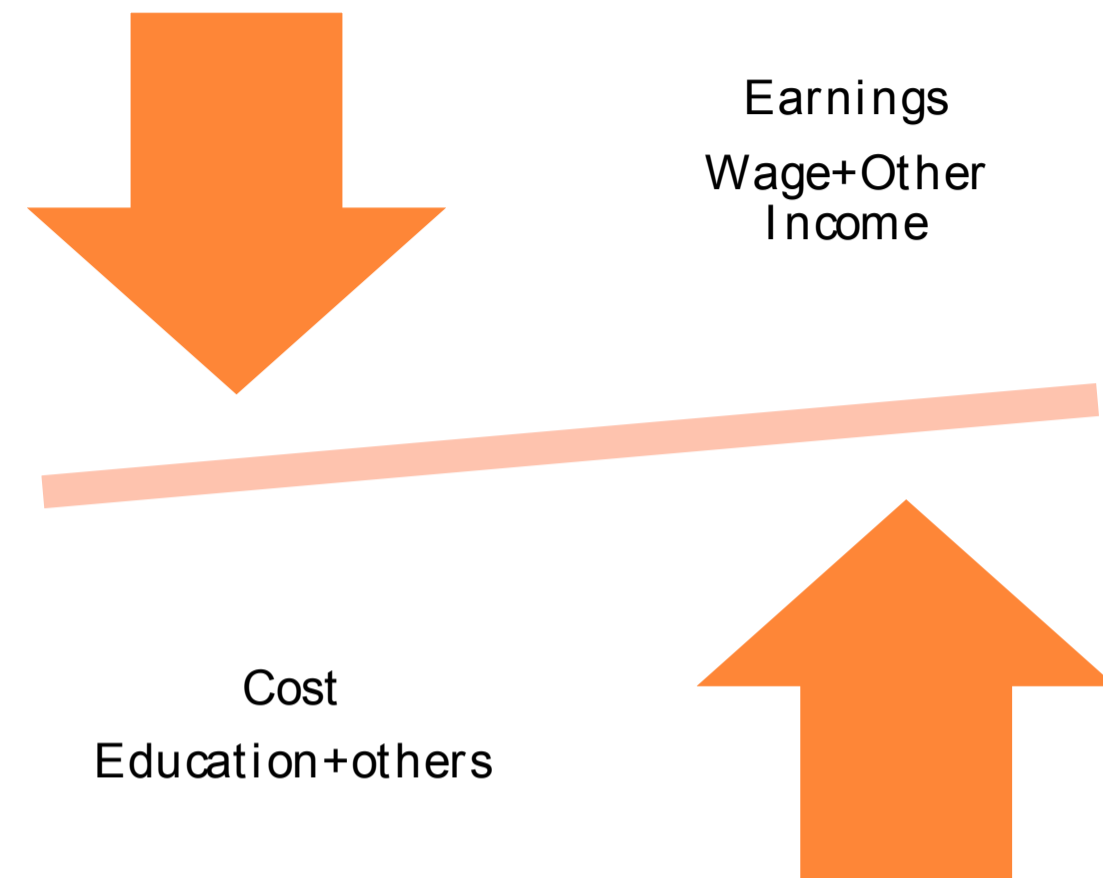
Cognitive Skills

Assignment:

HC cannot buy or sale itselfs
- We cannot extract education and skills
- Cognitive skills and non-cognitive skills cannot sale

Intangible
- Skills
- Service

Cannot separate from its body
- Machine can sale and separate from investor
- HC cannot separate and sale

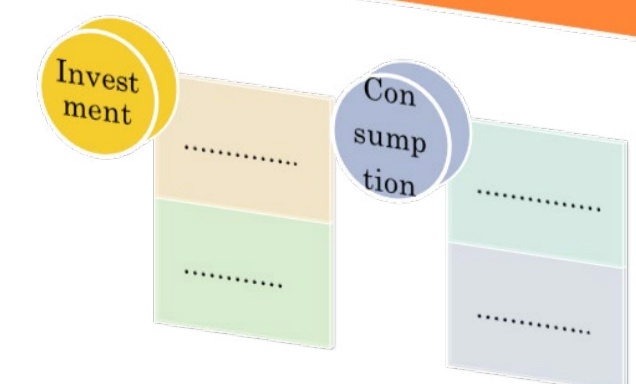### Cannot pricing
- Under some assumption, we can pricing : insurance

HC and Other Capital (cont.)

HC come from both
- Investment and
- Consumption

Invest ment

Con sump tion

Depreciation in HC

- **New technology**
  - Knowledge out –of-date
  - Skills not up to date
- **Production**
  - Produce more use more
  - Decline in long time

HC Enhancing by

- Education
- Migration
- HC
- Training
- Health

Measure HC

$$\hat{B} = \sum_{t=1}^{n} \frac{B_t}{(1+r)^t}$$

- Death Deviate
- Future Income Deviate
- Not present MP_L
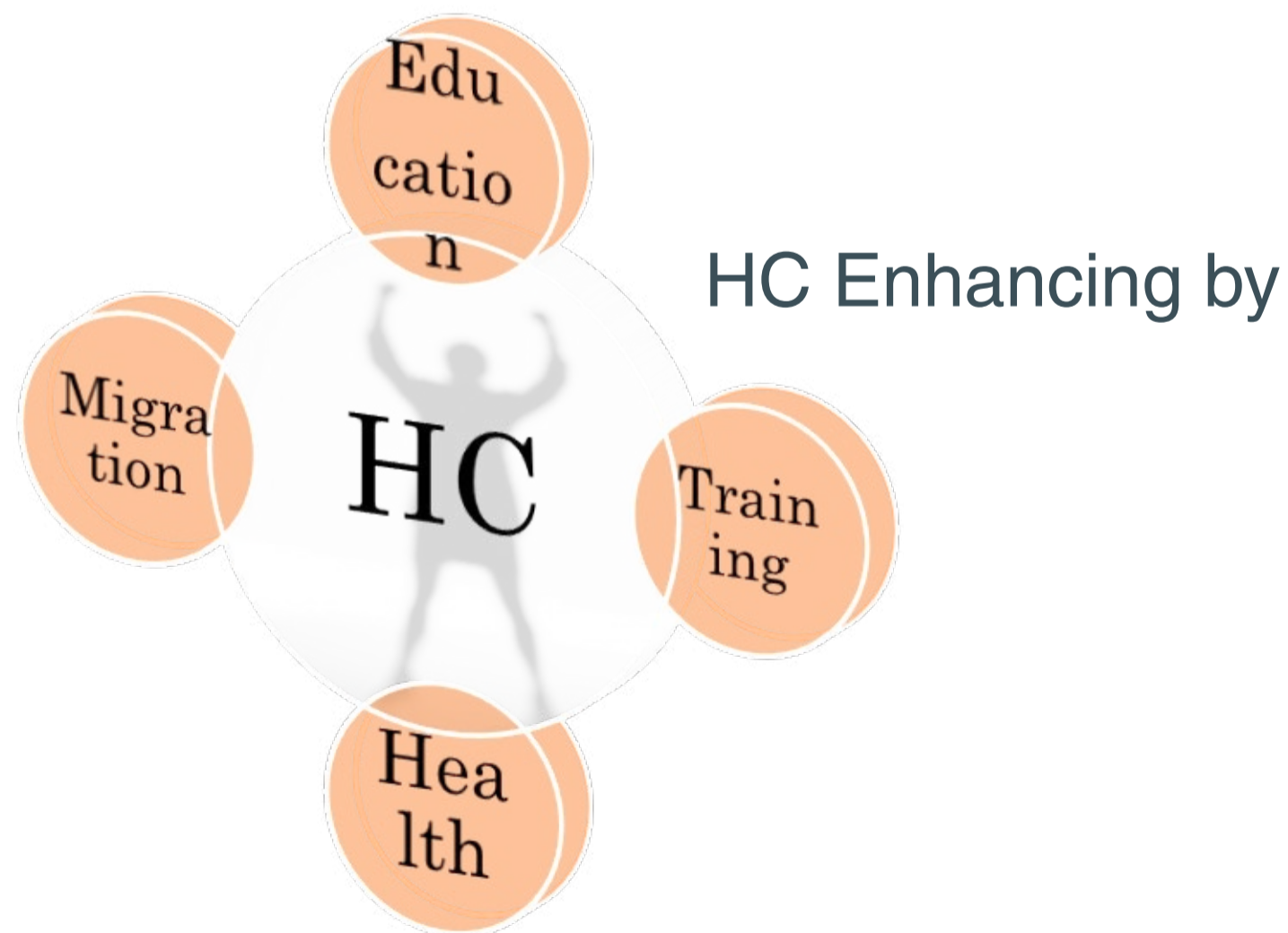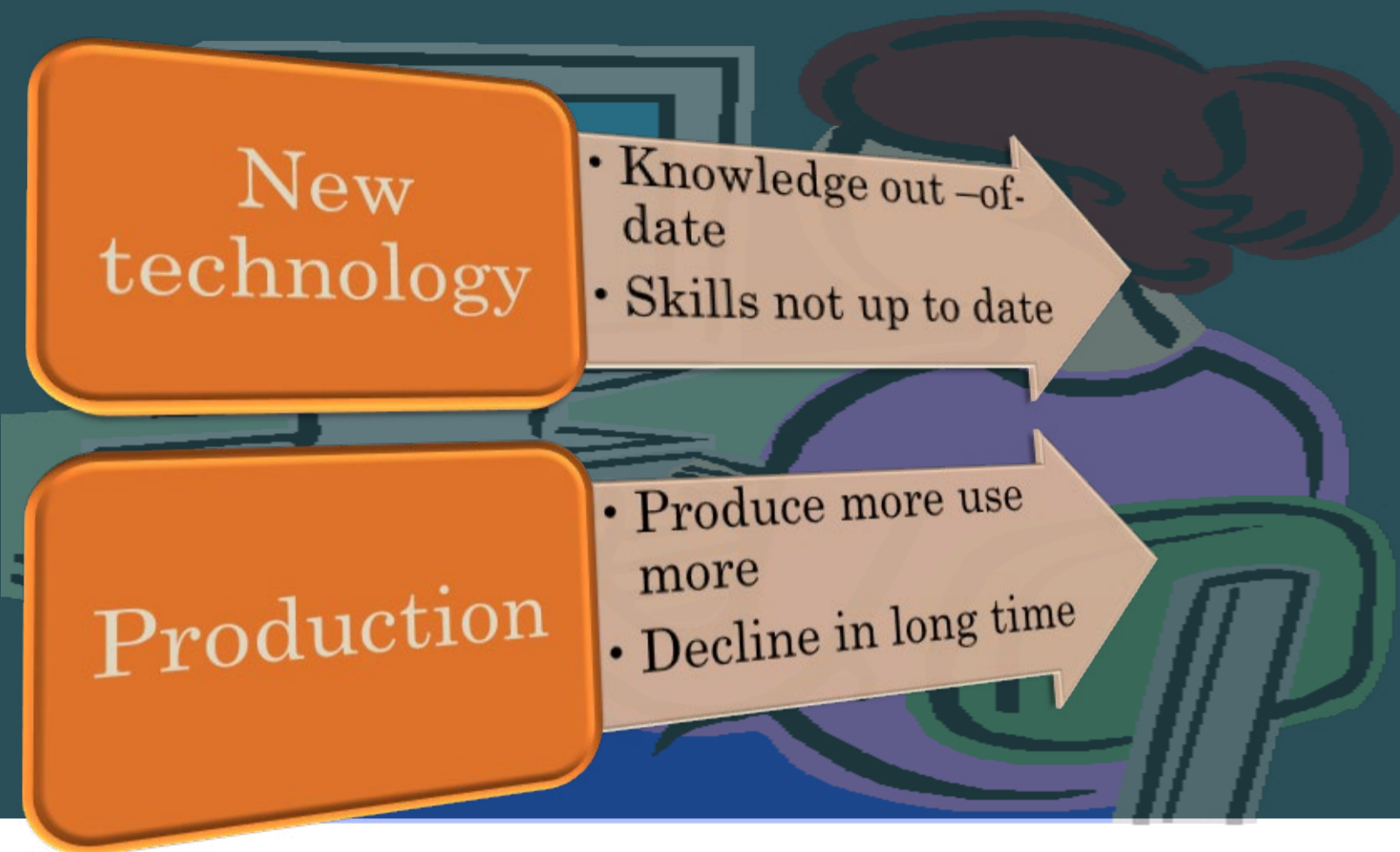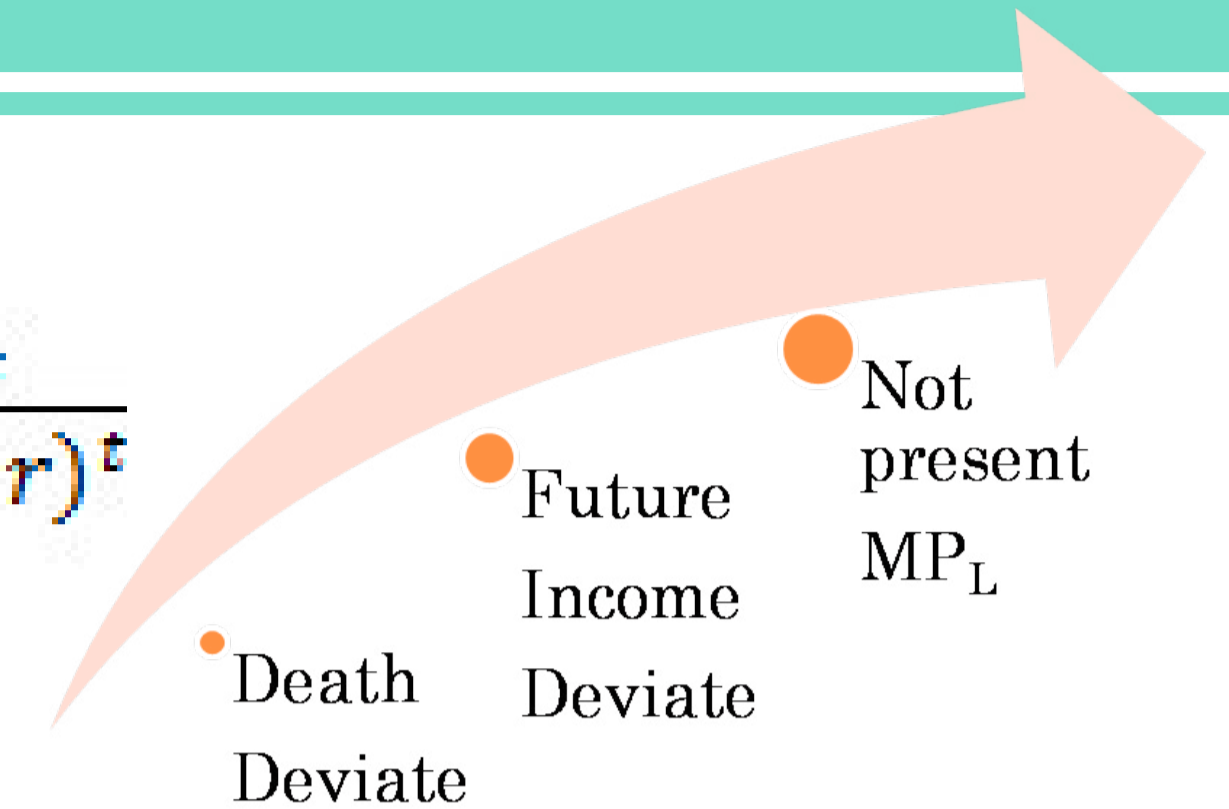
Where B hat is Benefit from HC in life time period from year 1,2,3,…

(W. Farr, 1853; Dublin and Lotka, 1930)

Measure Human Resource Development (HRD)

- Year of schooling level
- Number of professional
- Teacher per pupil ; 1: 100 , 1: 2000
- Engineer or scientist per 10,000 population
- Doctor or dentist per 10,000 population
- Number of primary school student per population (5-15 yr)
- Number of primary + secondary school student per population (5-19 yr)
- Number of secondary school student per population (15-19 yr)

Measure Human Resource Development (cont.)

- Number of undergraduate student per population (20-24 yr)
- Number of student in major science (undergraduate student+vocational) per total undergraduate student
- Number of student in major social sciences and arts (undergraduate) per total undergraduate students

Bibliography

- Thienchay Kiranandana. 1976. Economics:. Human Resource and Manpower Economics. Thailand: Thai Watanapanich Publishing Co.,ltd.

Chapter 2
Factors affects Human Resource Economics

Theory of population changing by Multhus

2.1 Factor in quantity

Multhus

Geometric Progression for Population	Arithmetic Progression for Food	Poverty

New Multhus

Geometric Progression for Population	Arithmetic Progression for Food	Poverty	War and Other Loss

Theory of biology to population changing

Raymond Pearl and Lowell J. Reed (1920)

Population

Logistic Curve

Year
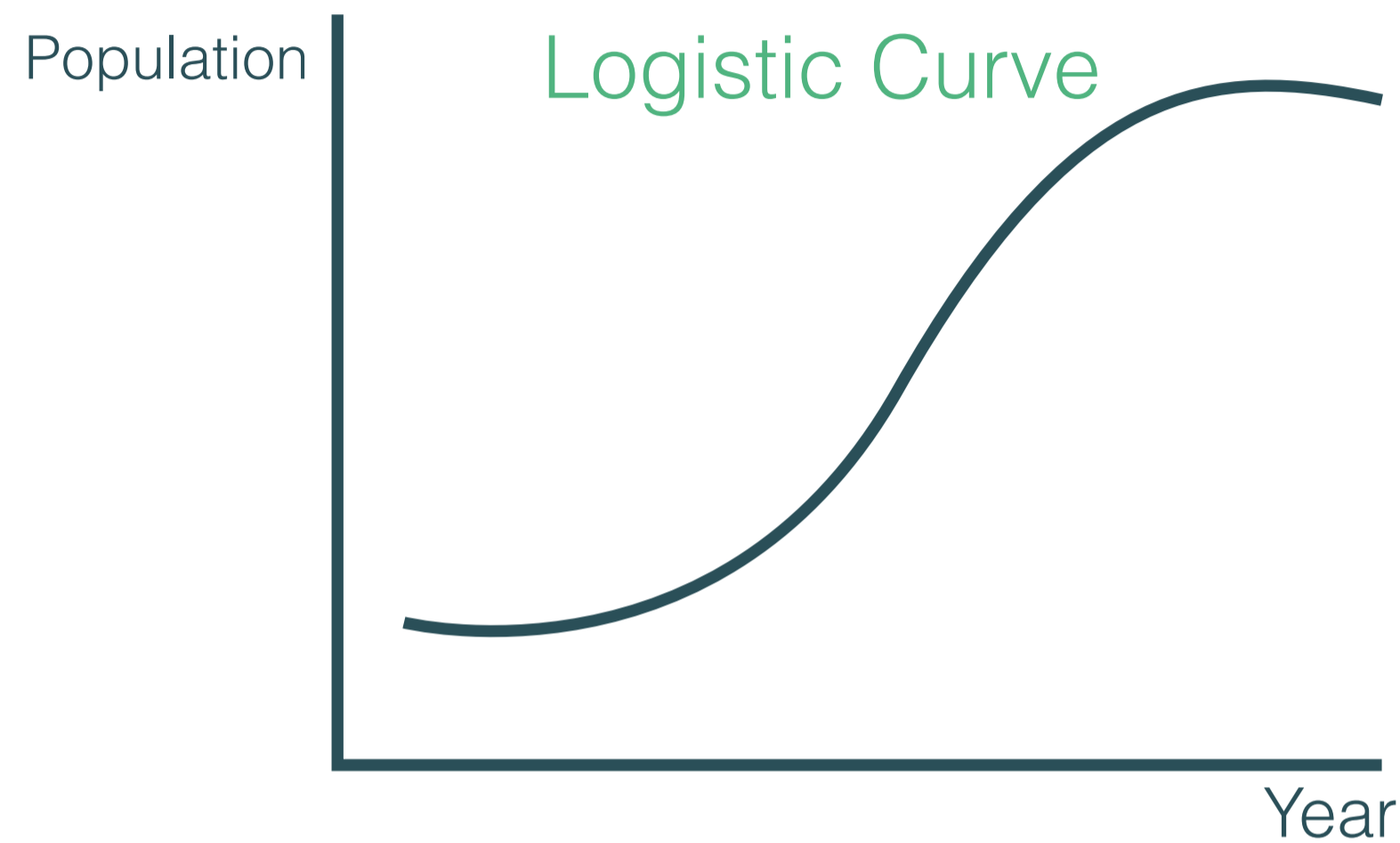
Theory of population changing

◉ Birth Rate VS Death Rate

| Decreasing Rate | Increasing Rate |

Death<Birth

Death<Birth

Death>Birth

Death<Birth

Death>Birth

Death<Birth
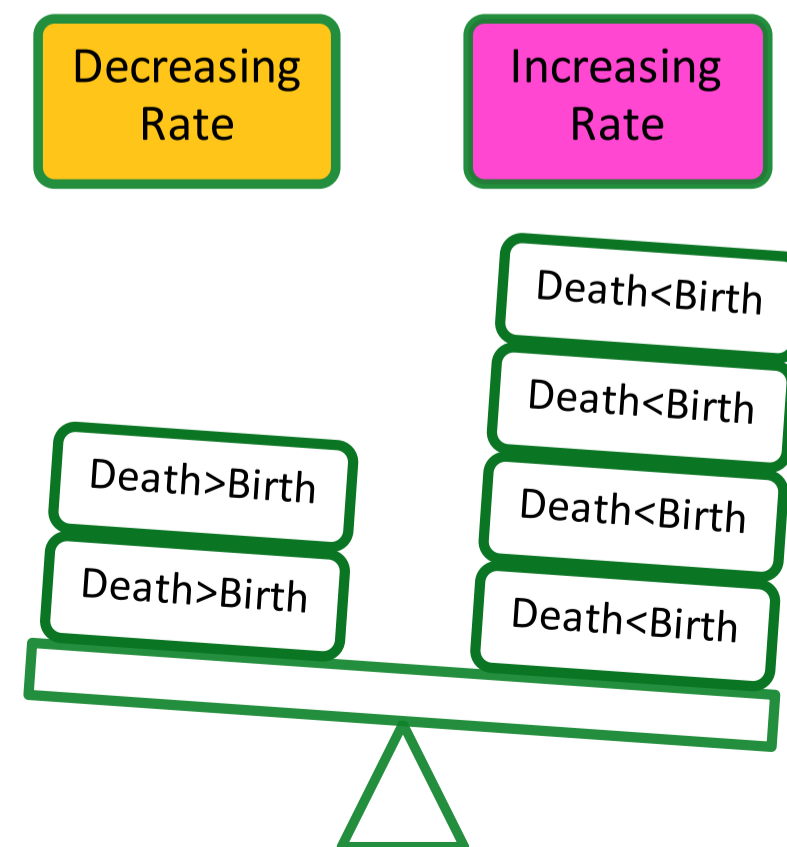
Multiphase Response Theory (Kingsley Davis,1963)

Stage1 increasing pop.
◉ Death rate decrease
◉ Birth rate constant

Stage 2 Economic Effects
◉ Increase job opportunity

Other adaptation in society
◉ Study in higher education level
◉ Being single ,Married delay, Abortion
◉ Migration
◉ Limit number of children

Optimum population theory

Productivity

Growth of GDP 7.6%

Land 1%

Productivity increase 16%

Labor quantity 26%

Capital 37%

Labor quality 20%
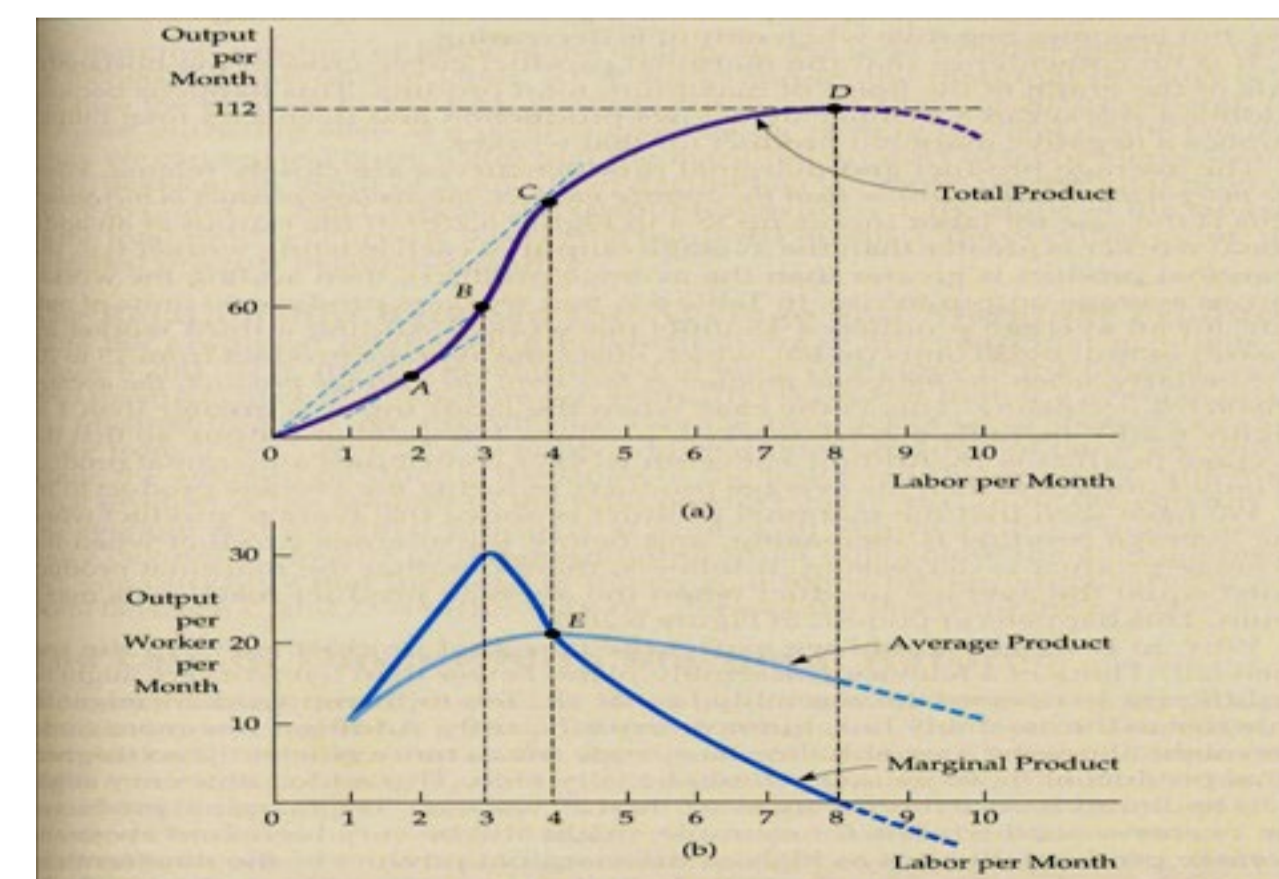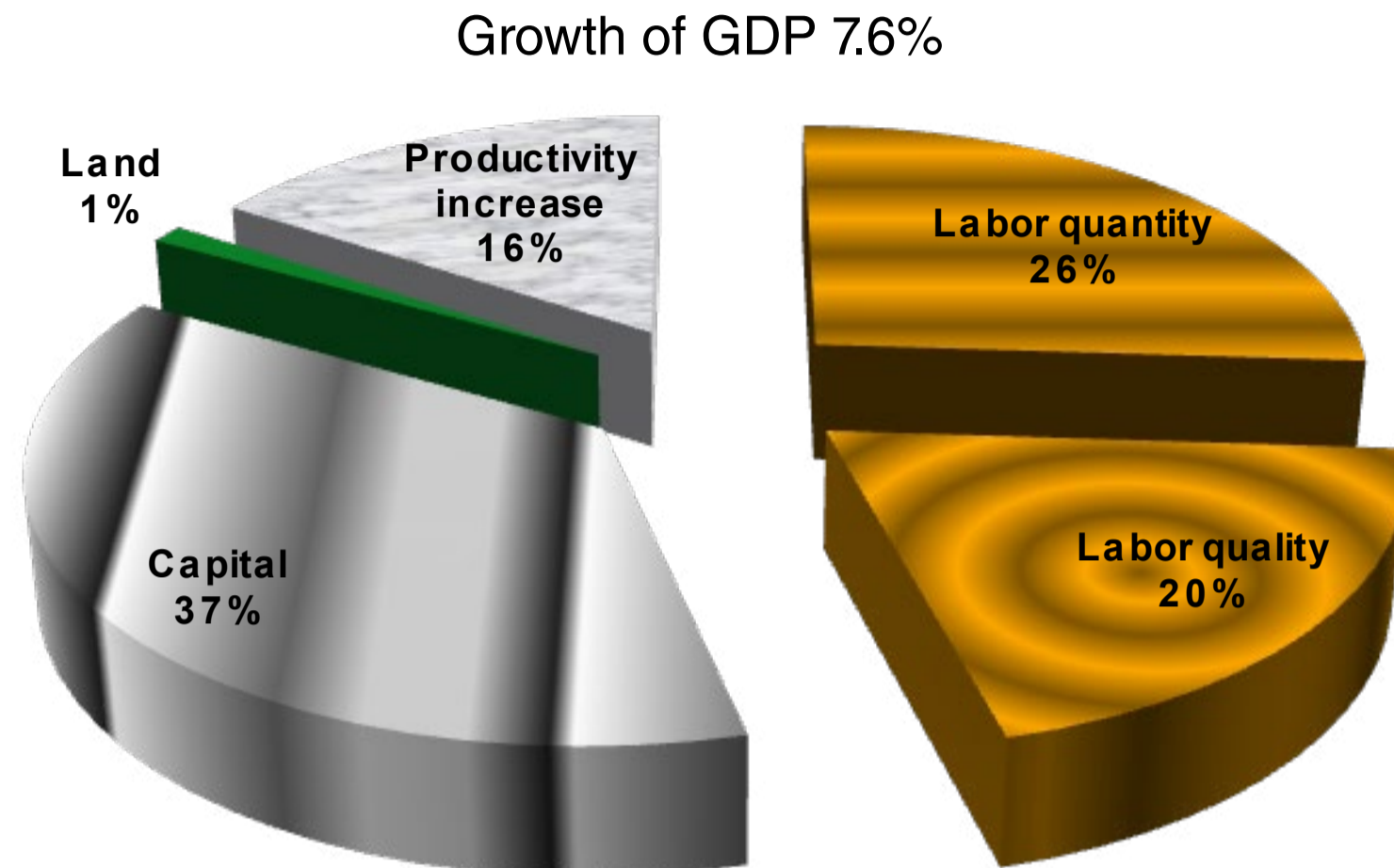
Pranee Tinnakorn (1994

Labor Productivity

Average Product (AP_L)

- TP/L

Marginal Product (MP_L)

- dTP/dL

Value of Marginal Product of Labor (VMP_L)

- $VMP_L = MP_L * P$

If $VMP_L >$ Wage then employ more of labor

Wage

W_1

W_0

VMP_0 VMP_2

0   L_1 L_0 L_2 Labor

Labor and goods market

Wage

W_1

W_0

VMP_L

0   L_1 L_0 Labor

Price

S_1

S_0

P_1

P_0

D_x

0   Q_1 Q_0 Quantity of X

L_0 to L_1

P_0 to P_1

- Wage ⬆

- VMP_L ⬇

- Supply of X ⬇

- Price X ⬆

Demand for Labor ⬇

S_0 to S_1
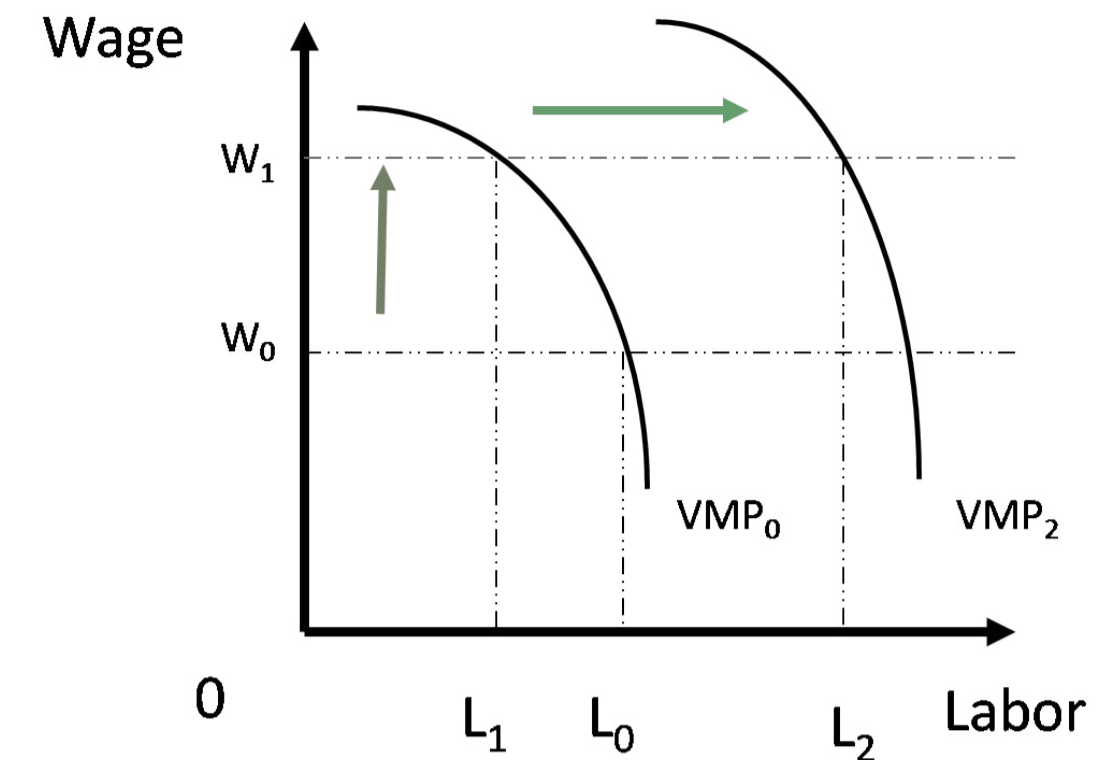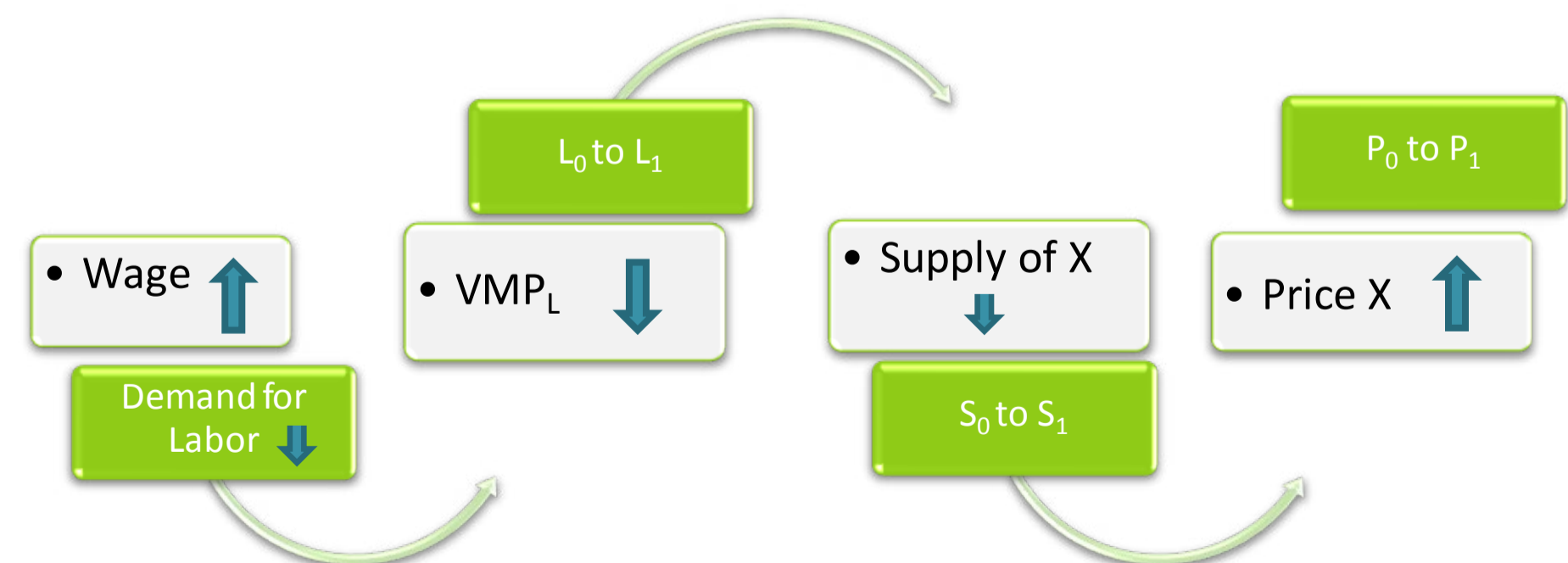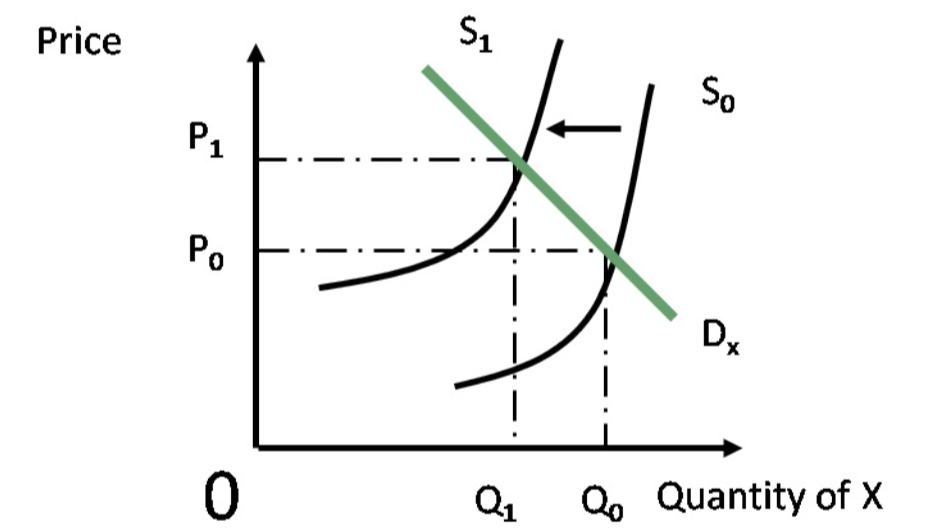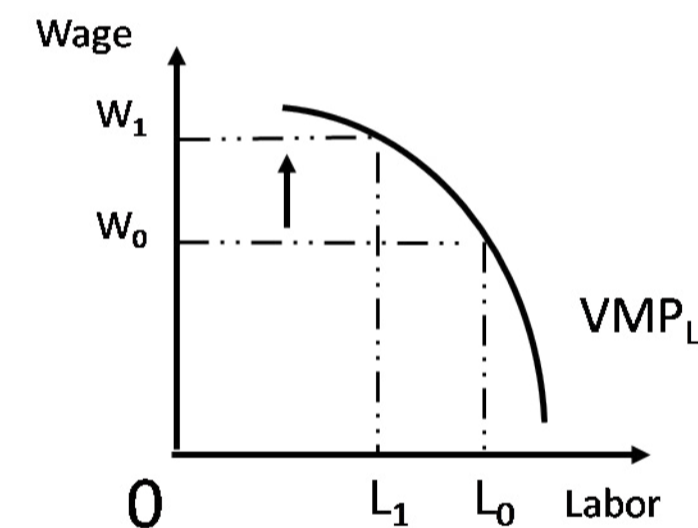
X is commodity or goods

◉ Labor Productivity Index :LPI

$$LPI = \frac{Q_{ti}}{Q_{0i}} \quad \frac{L_{0i}}{L_{ti}}$$

$\frac{Q_{ti}}{Q_{0i}}$ Quantity (GDP)of product in industry "i" in year "t", "0" is base year

$\frac{L_{ti}}{L_{0i}}$ Quantity of labor in industry "i" in year "t" , "0" is base year

◉ Marginal product of labor = ?

◉ HOW to measure? Discuss in your group 3 persons per group.

◉ Present in the class

Chapter 3
Human Resource Evaluation

3.1 Concept and Definition of Human Capital

Price of Input

Human Capital   Physical Capital

How to evaluation human's value   Interest Rate

Death from war   Benefit from Heath Project   Income and Asset Taxation

Compensation (unemployed ,handicap)

- ◉ Generally, Capital is one of input that we can utilize within a period of time.
- ◉ Therefore, all capital were embedded depreciation in various types.
- ◉ We can calculate "Present Value" or a value of capital.

3.2 Human Capital Evaluation

Evaluation Approach

Cost of Production   Capitalized Earning Approach
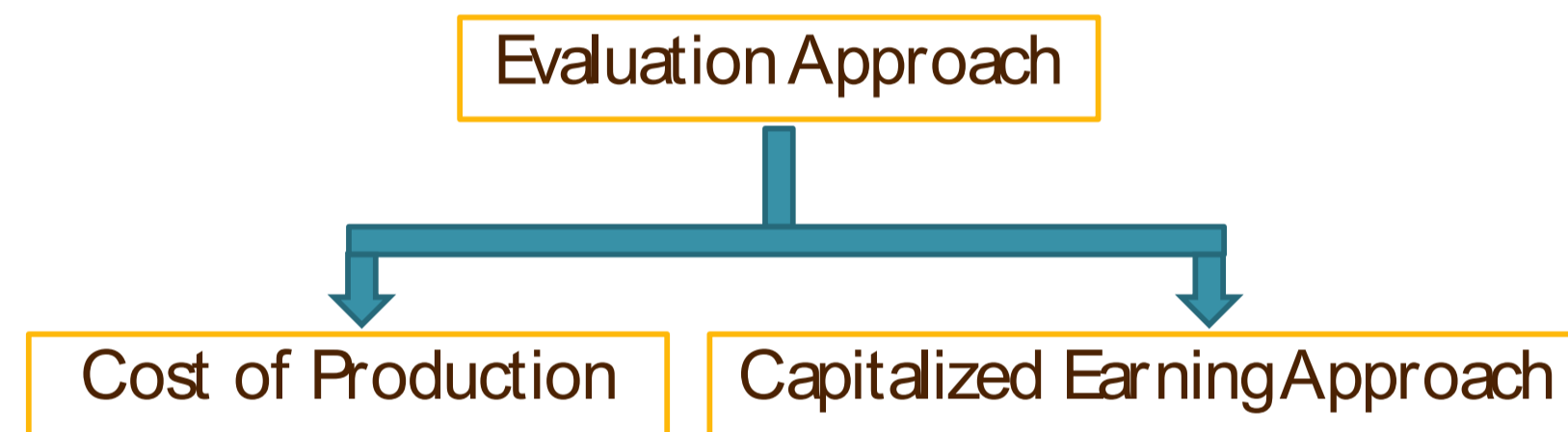
Cost of Production in Human

- Food
- House
- Cloth
- Medicine
- Education
- Training

Difficult to calculate and segregate by expenditure's item

Capitalized Earning Approach

Income / Earning

Marginal Product of Labor

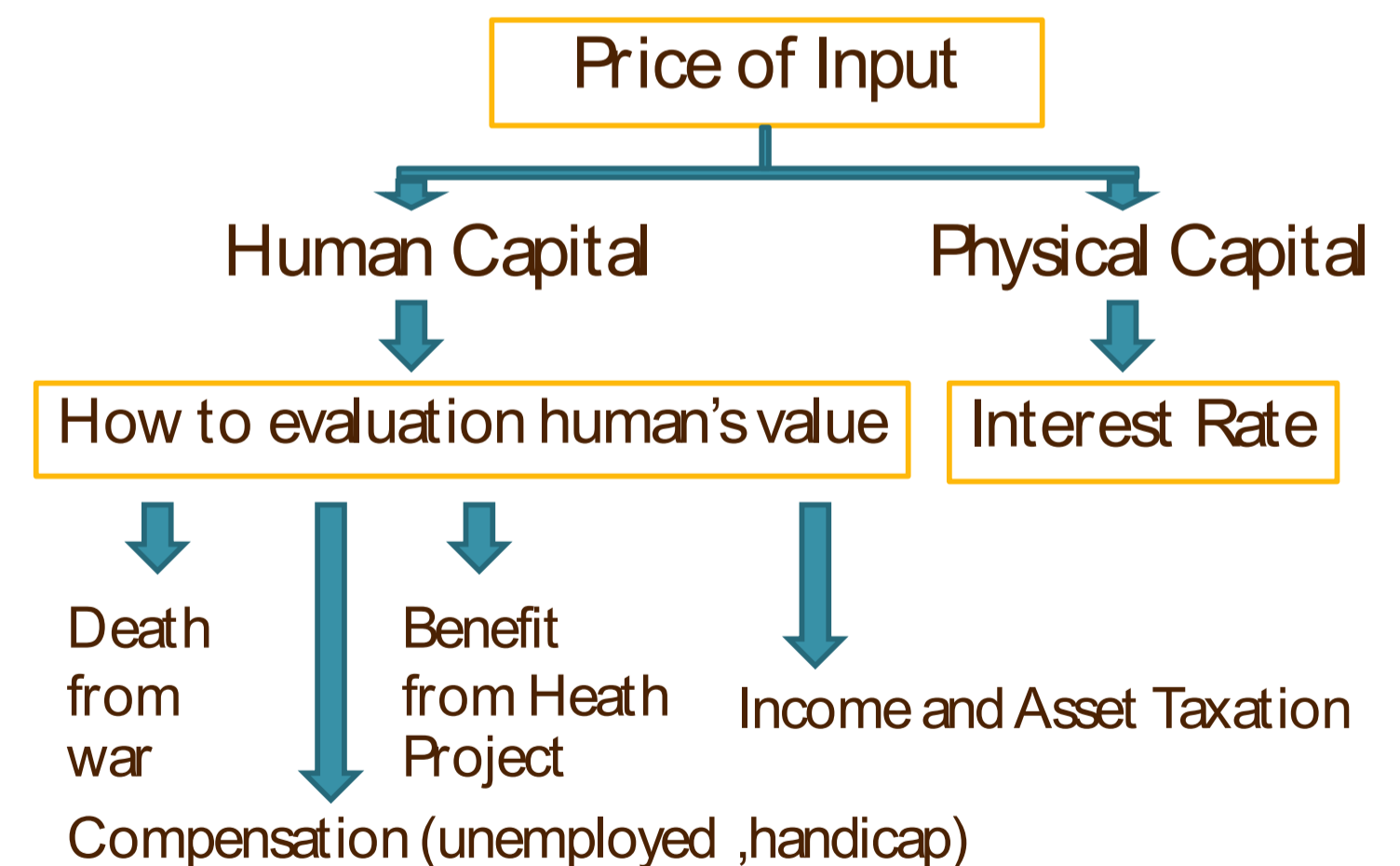$$HC = \sum_{i=0}^{n} \frac{Y_i}{(1+r)^i}$$

r = interest rate
n = working life time

3.3 Human VS Physical Capital

Human Capital and Physical Capital

1. Can't sell
2. Can't set up price
3. Intangible (skills)
4. Can't separate from owner
5. Can't define as an investment or consumption

1. Can sell
2. Can set up price
3. Tangible
4. Can separate from owner
5. Can define as an investment or consumption

3.4 Human Capital Investment Concept

Enhancing HC

- Years of Schooling ⬆
- Training ⬆
- Quality of Health ⬆
- Quality of Life ⬆

Measurement of investment is "Cost Benefit Analysis" call "Internal Rate of Return"

- ➤ Ex ante : measure before project
- ➤ Ex post : measure after project ➡ impact

Before project we have to measure
    Level of schooling years
IRR , etc
    Level of quality of life such as % of illness
After project we follow to measure the impact
    Level of schooling years ➡ employment rate
    Level of quality of life ➡ employment rate, cost of
    health decrease

> **Cost – Benefit Analysis**
> **Internal Rate of Return**

⬇

Compare the opportunity cost

⬇

Select the worthiest project

⬇

Allocation Resource with Efficiency Way

⬇

Maximize Social Welfare

3.4.1 Law of Present Value

$$Present\ Value(PV) = \sum_{t=1}^{n} \frac{Future\ Value\ (FV)}{(1+r)^t}$$

$$Future\ Value = \sum_{t=1}^{n} PV(1+r)^t$$

Ex 1 Deposit 100 B. within 10 years. bank set interest rate 5% per year. Therefore, you will obtain the money

$$FV = \sum_{t=1}^{n} PV(1+r)^t$$

$$FV = 100(1+0.05)^{10}$$

$$FV = 100(1.05) + 100(1.05)^2 + \cdots + 100(1.05)^{10}$$

Ex 2 In team of "PV" ,if project generate the income for 10 years equal to 100,000,000 B. then how much does present in present value (r=0.75%)

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

where FV = 100,000,000
          r = 0.75%
          t = 10

so

$$PV = \frac{100,000,000}{(1+0.0075)} + \frac{100,000,000}{(1+0.0075)^2} + \cdots + \frac{100,000,000}{(1+0.0075)^{10}}$$

Ex 3 Occupation A,B have a cost and benefit in each year show in the table 3.1 r=5%

Year	Occ A		Occ B		NB_A	NB_B	PV_A	PV_B
	Cost	Benefit	Cost	Benefit				
0	500	10,000	300	10,000				
1	600	10,000	500	10,000				
2	600	10,000	500	18,000				
3	600	10,000	500	18,000				
4	600	10,000	500	18,000				
5	700	10,000	600	18,000				
6	700	10,000	600	18,000				
7	700	10,000	600	18,000				
8	700	10,000	700	18,000				
9	700	10,000	700	18,000				
10	700	10,000	700	18,000				

Ex 3 is your assignment, submit next week by hand writing
Net (Benefit) Present Value

$$NPV = (B_0 - C_0) + \frac{(B_1 - C_1)}{(1+r)^1} + \frac{(B_2 - C_2)}{(1+r)^2} + \cdots + \frac{(B_n - C_n)}{(1+r)^n}$$

$$NPV = \sum_{i=0}^{n} \frac{(B_i - C_i)}{(1+r)^i} \quad (1)$$

where

n = number of project's year
i = year 0,1,2,…n
Bi= Benefit of year i
Ci= Cost of year i

From (1) if i increase then NPV decrease. Please explain term of economics?

3.4.2 Law of Internal Rate of Return (IRR)

IRR is a rate of return of project.

IRR=r

Where r is an interest rate that affect NPV equal to zero.

From law of present value

$$NPV = \sum_{i=0}^{n} \frac{(B_i - C_i)}{(1+r)^i} = 0 \quad (1)$$

find r that plug in (1) then NPV=0

Ex 4 Consider cash flow

Year	Cost	Benefit	NB	NPV(r=20%)	NPV(r=25%)
0	10,000	1,000	-9,000	$-9,000/(1.2)^0$	$-9,000/(1.25)^0$
1	10,000	1,000	-9,000	$-9,000/(1.2)$	$-9,000/(1.25)$
2	10,000	18,000	8,000	$8,000/(1.2)^2$	$8,000/(1.25)^2$
3	10,000	18,000	8,000	$8,000/(1.2)^3$	$8,000/(1.25)^3$
4	10,000	18,000	8,000	$8,000/(1.2)^4$	$8,000/(1.25)^4$
5	10,000	18,000	8,000	$8,000/(1.2)^5$	$8,000/(1.25)^5$
Total				758	-1,088

$$\begin{array}{c} r = 20\% \\ 5\% \end{array}\Big]X=? \qquad \begin{array}{l} NPV = 758 \\ NPV = 0 \\ NPV = -1,088 \end{array}\Big]1,846$$

if 1,846 then different 5%

    if 758 then different (5x758)/1,846=2.05

    X=2.05

    ∴r =22.05

    IRR=22.05

Assignment

    Find IRR by hand writing and hand calculate

Chapter 4
Human Resource
Development : Education

4.1 Education is investment or consumption
4.2 Education is private or public goods ?
4.3 Education is individual demand or publicdemand
4.4 Assumption and Investment
4.5 Saving (i) VS Education (r)
4.6 Relation between education ,age and earning

4.1 Education is investment or consumption

Macro level

Education

| Investment Government | Consumption Household |

Macroeconomics

- Compensate
- Wage

- Education Expense
- Training Expense

4.2 Education is private or public goods

Education

Private Goods

Commodity
Relate

Public Goods

Wage

High Education → New Technology

Social Minded

Good Consciences

Social Welfare
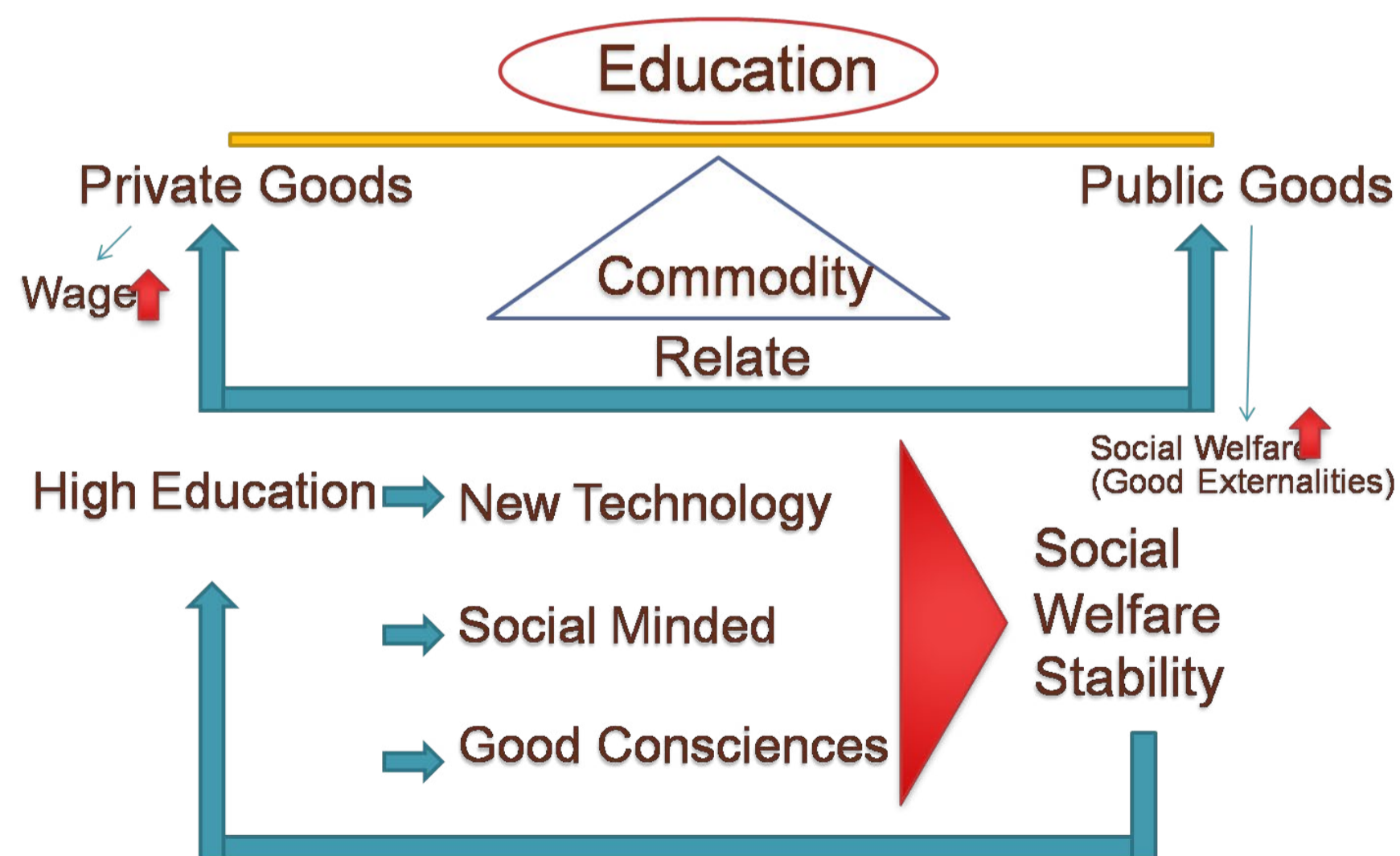(Good Externalities)

Social Welfare Stability
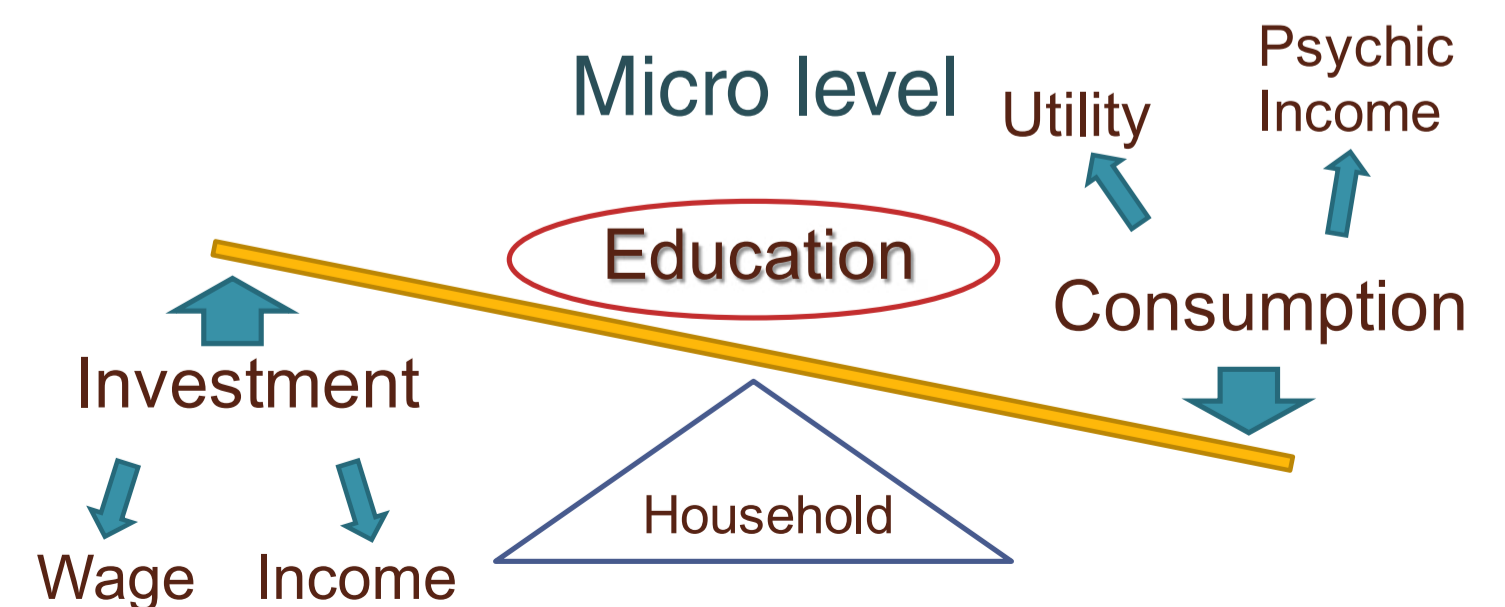
Assumption of Public Goods
  1. Open access
  2. One consume do not obstruct or decrease consume others
Case of "Satellite"
  If government setting the free satellite that everyone can access with free of change. One household access to this system will disturb others.

4.3 Is education defended as individual demand or public demand?

A) Individual demand of education

Compare to commodity in the market, x, we have demand for x at Px and Qx

Individual demand of education, we have demand for education x years of schooling and we have to pay for tuition fee. Later, we gain educational internal rate of return "r"

$$\sum_{t=0}^{n} \frac{(B_t - C_t)}{(1 + r)^t}$$

Where,

B_t is Benefit (wage) in t period
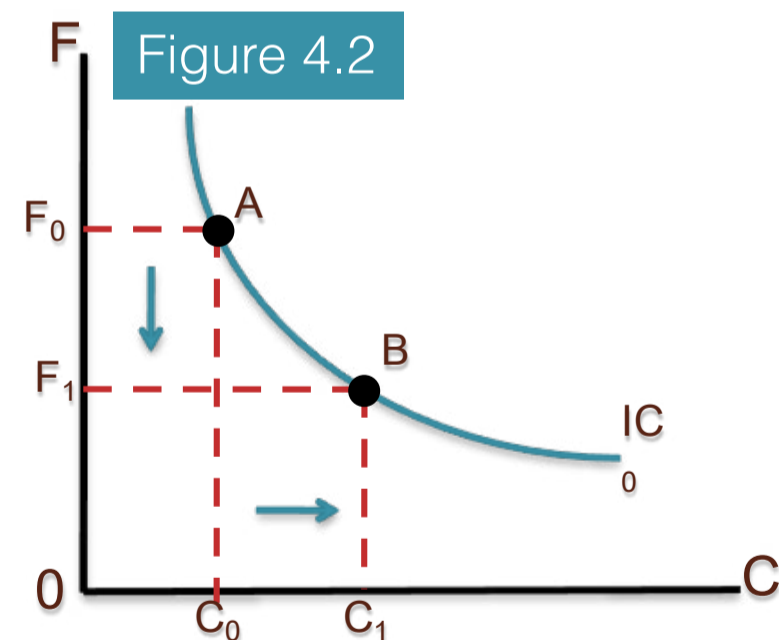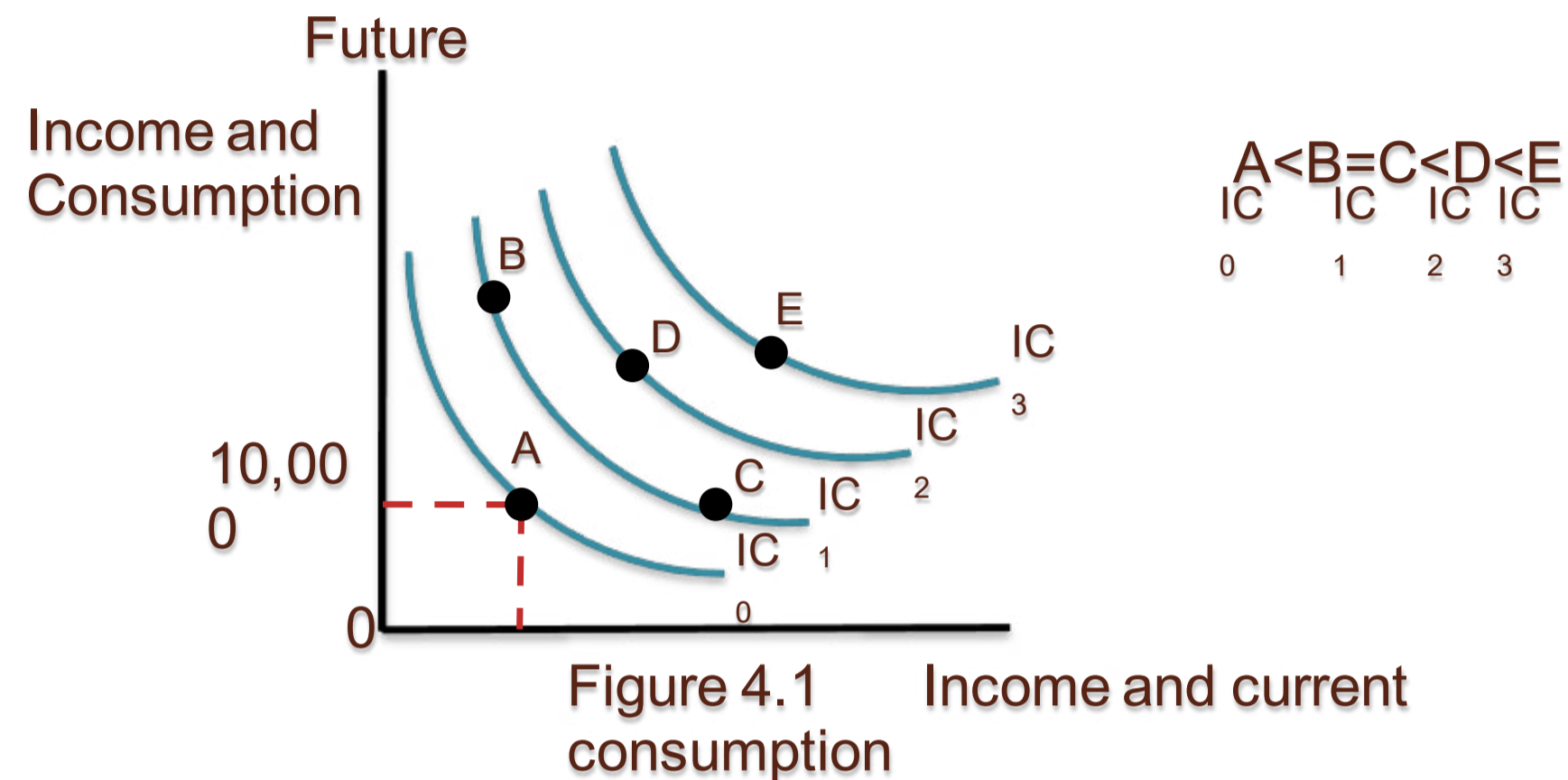C_t is Cost (tuition) in t period
r is Internal Rate of Return
n is Number of years of schooling

Indifferent Curve with two alternative of income
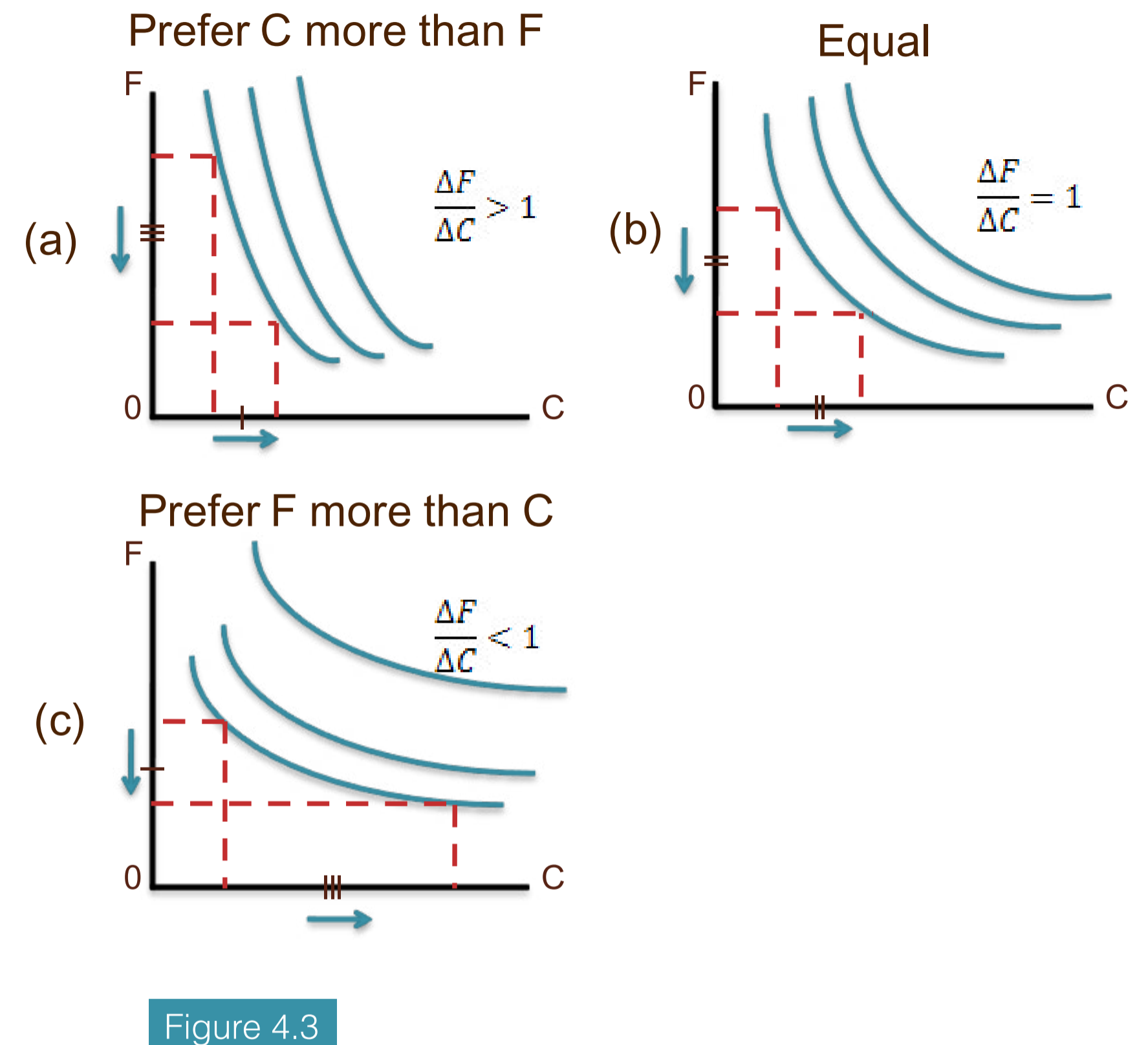<u>First</u> is consume now
<u>Second</u> is consume in the future

Future

Income and
Consumption

$$A<B=C<D<E$$
$$IC_0 \quad IC_1 \quad IC_2 \quad IC_3$$

10,00
0

Figure 4.1   Income and current
consumption

Figure 4.2

F_0

F_1

C_0 C_1

According to assumption of con-
sumer-choice-theory
1) More is preferred to less
2) Substitution   Trade-offs

<u>From figure 4.2</u> Moving from point A to point B means we re-
duce future consumption ($F_0 \rightarrow F_1$) then we obtain more current
consumption ($C_0 \rightarrow C_1$) with same utility IC_0 so, $\frac{\Delta F}{\Delta C}$ call "marginal
rate of substitution"
Slope through A to B = $\frac{\Delta F}{\Delta C}$ = marginal rate of time preference.

Prefer C more than F

(a)

$$\frac{\Delta F}{\Delta C} > 1$$

Equal

(b)

$$\frac{\Delta F}{\Delta C} = 1$$

Prefer F more than C

(c)

$$\frac{\Delta F}{\Delta C} < 1$$

Figure 4.3

• Budget Line

(A)

Budget /Income

Figure 4.4

(B)

$A \rightarrow B$ Saving ▲ because r ▼ if
r ▲ Saving ▼ r → return on
other invest.
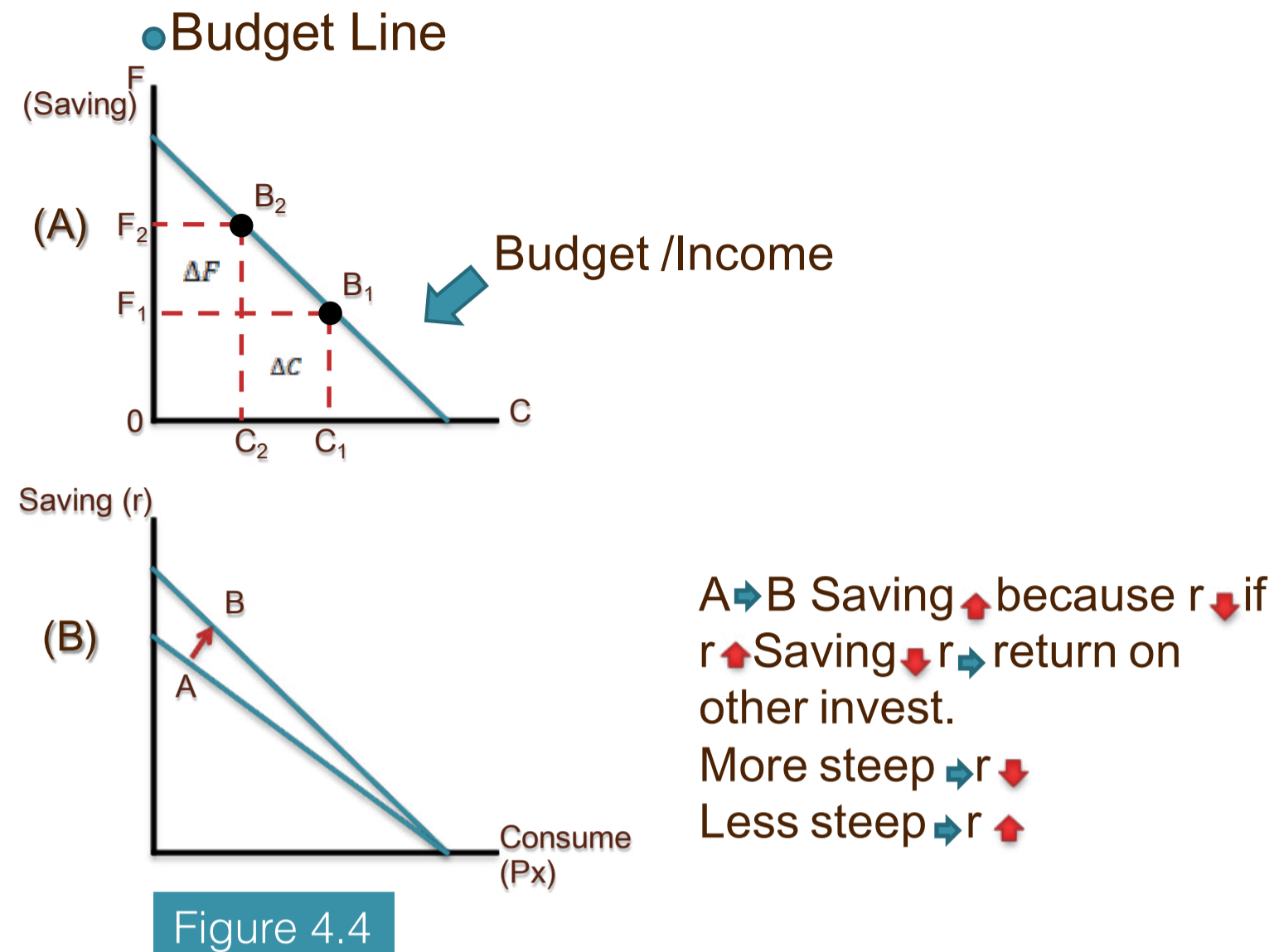More steep → r ▼
Less steep → r ▲

Figure 4.4 shows the total income of individual I who can allocate his/her money to consume now or future.

B_0 present no saving, almost consume now, B_1 show saving and consume at F_1 , C_1 respectively.

If he/she at B_1 is present initial point, consume C_1 and saving F_1 when he reduce his consumption from C_1 to C_2 (ΔC) then, He has transferred his money to saving with ΔF and obtain "I" interest rate.

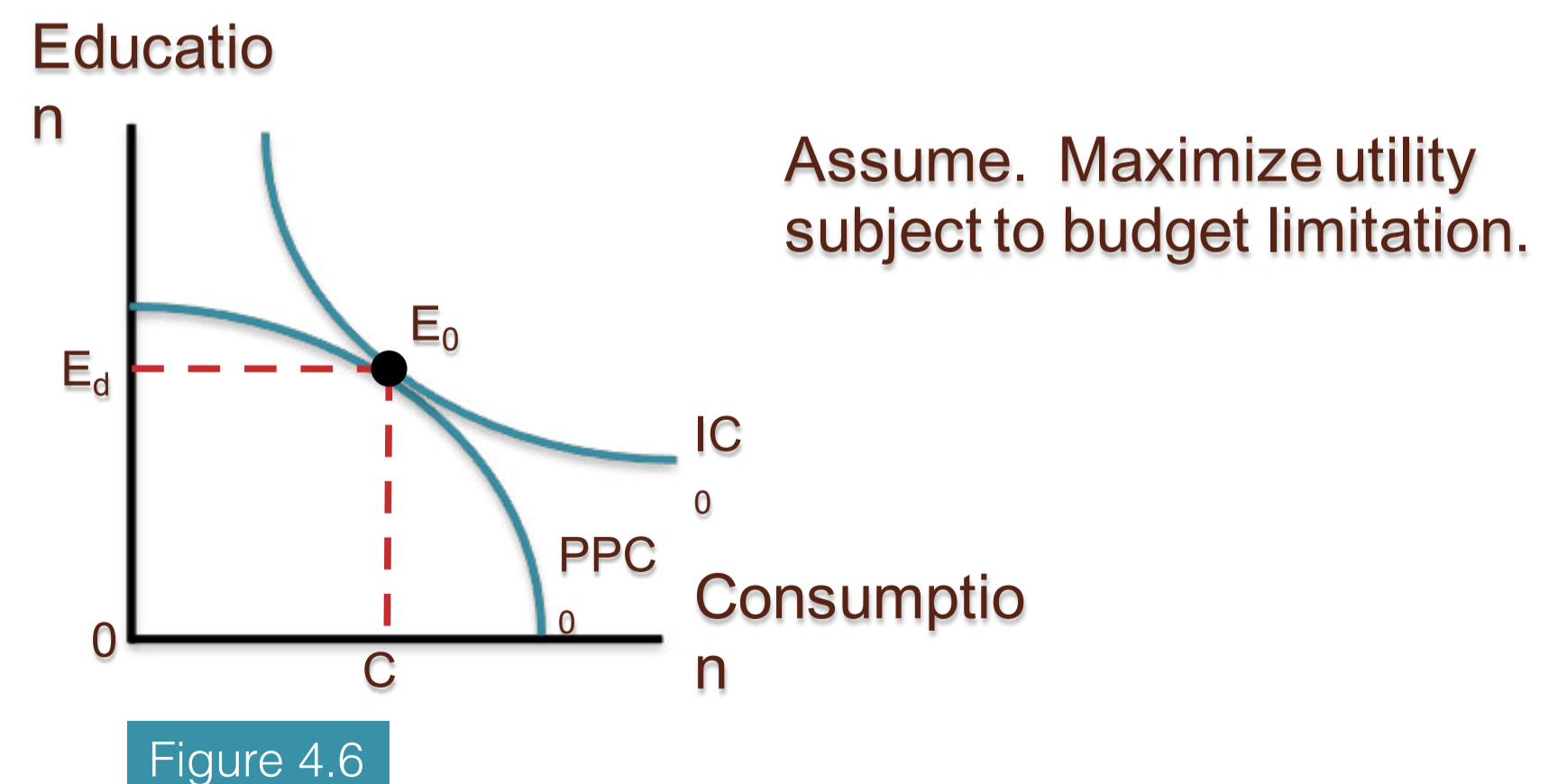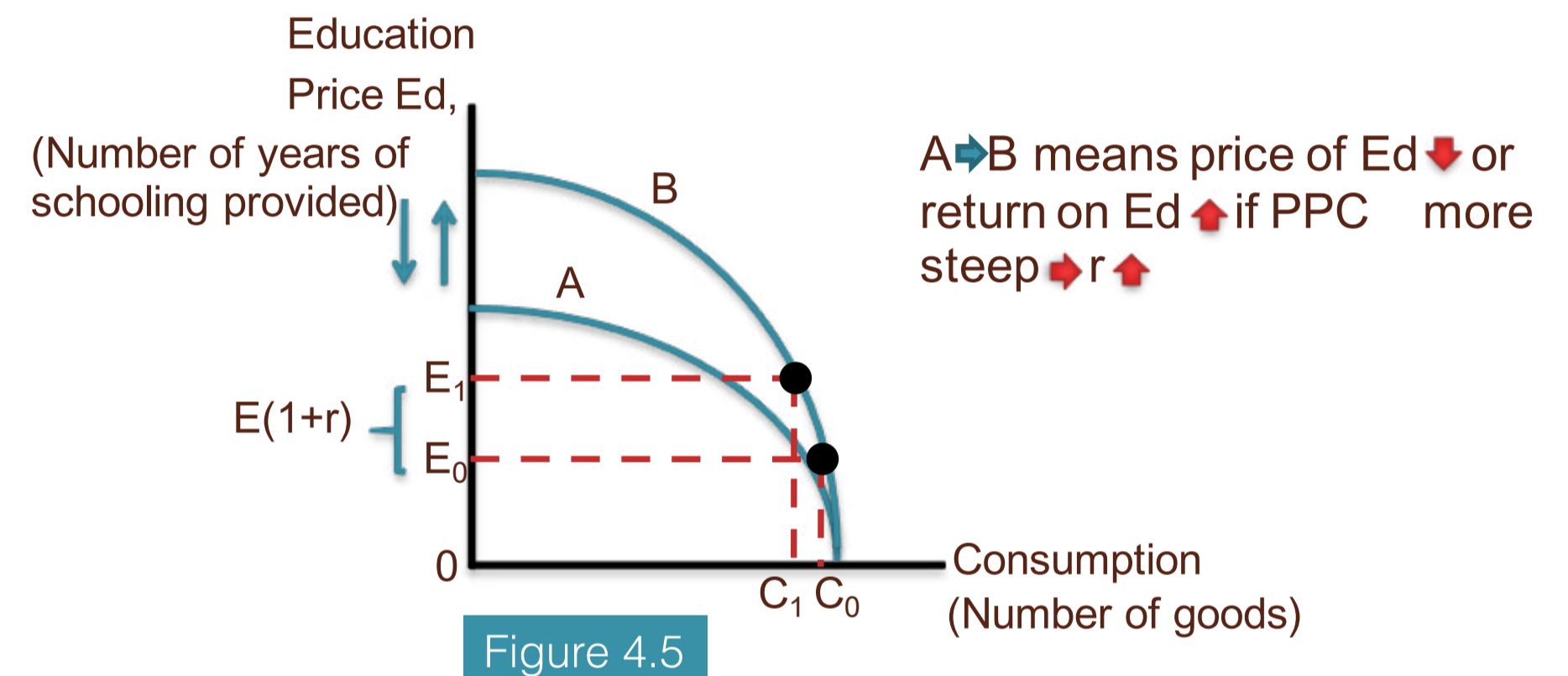so, he obtain saving amount = $\Delta F(1+i)$

Conclude that

B_0 No saving consume 100%

B_1 Saving and consume (gain $\Delta F(1+i)$)

B_2 More saving less consume (Trade-offs)

4.4 Consumption and Investment

Assumption

1. Two alternatives are consumption and invest education
2. Rate of return on education is "r" , price of education is "i"
3. Production on possibility curve (PPC)

$A \rightarrow B$ means price of Ed ▼ or
return on Ed ▲ if PPC more
steep → r ▲

Figure 4.5

Assume. Maximize utility subject to budget limitation.

Figure 4.6

Education ➡ Price is i

If i ⬆ ➡ Education ⬇

If i ⬇ ➡ Education ⬆

so, when i⬇PPC move from A➡B

E_0 is equilibrium between education VS consumption. Maximize utility subject to budget constraint.

4.5 Saving (i) VS Education (r)

Assumption

1. Saving and education are substitution goods
2. Opportunity cost of saving is return on education (r)
3. Opportunity cost of education is return on saving (i)
4. Price of saving is r
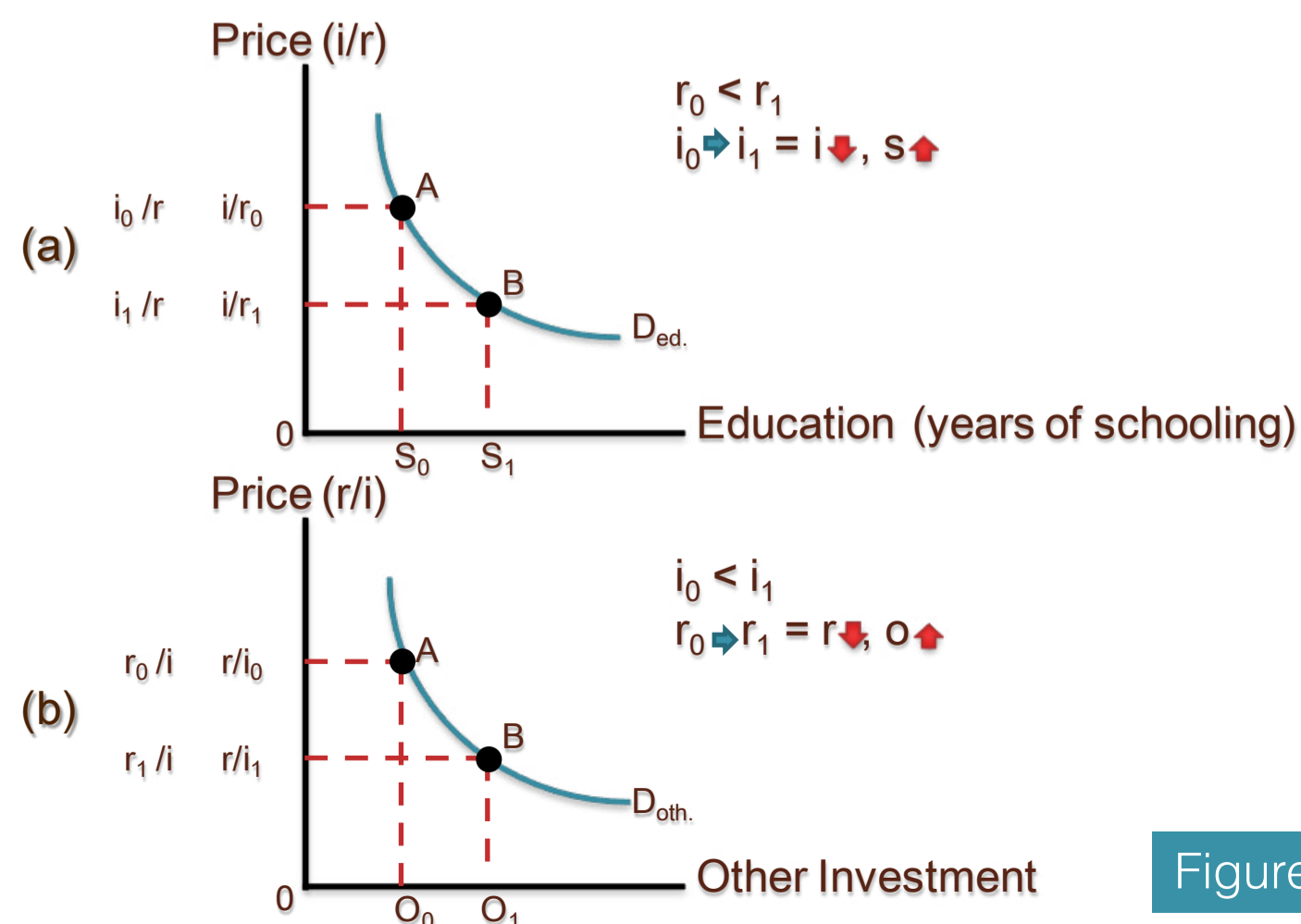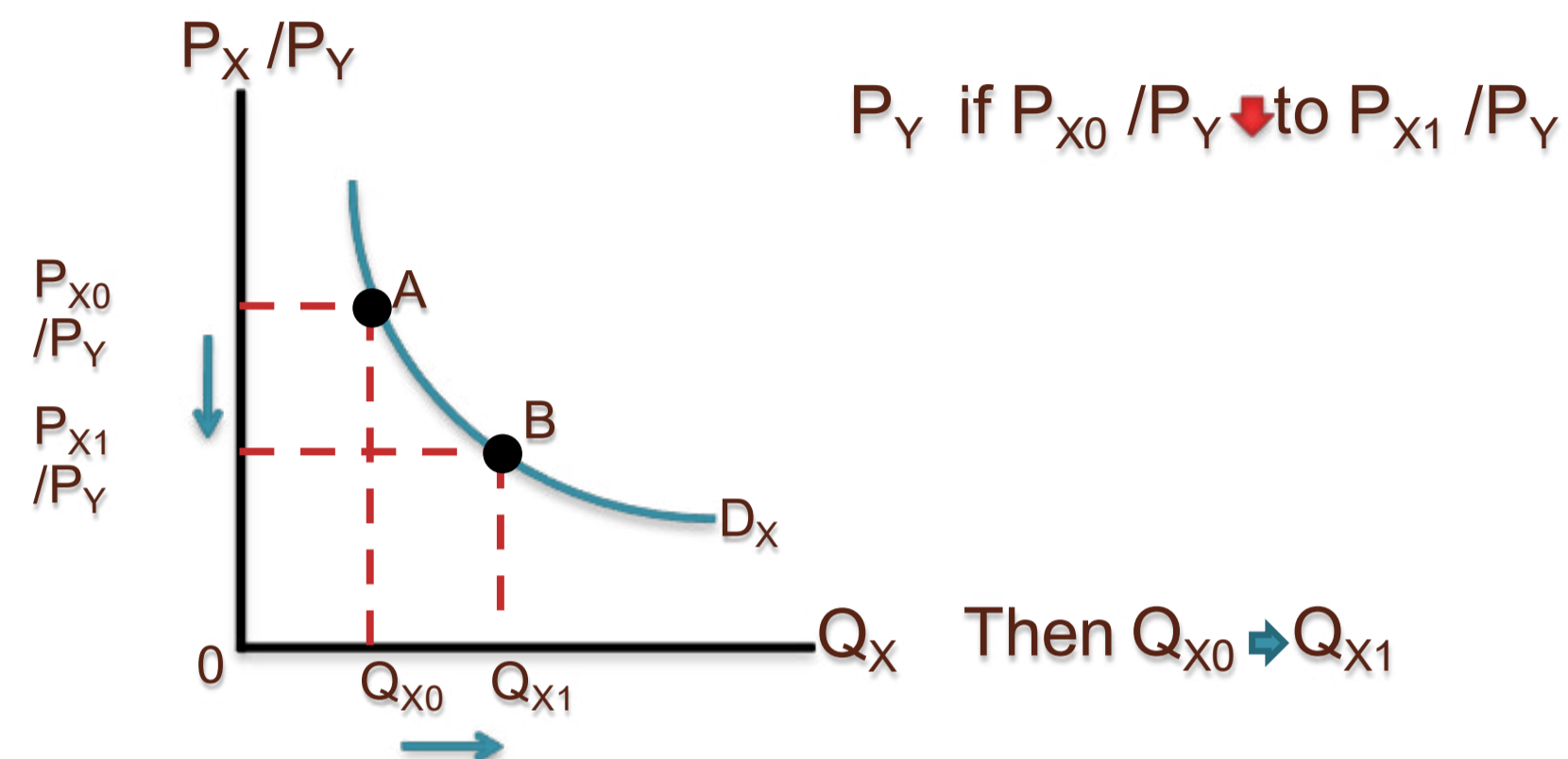5. Price of education is i
6. Saving and education are normal goods

Figure 4.7

Assignment

Derived graph, indifference curve of education and saving. Denote i , then show Ded.

More dearly by show two commodities, Qx and Qy

P_Y if P_{X0} /P_Y ⬇to P_{X1} /P_Y

Then Q_{X0} ➡Q_{X1}

B) Social Demand for Education (D_{eds})
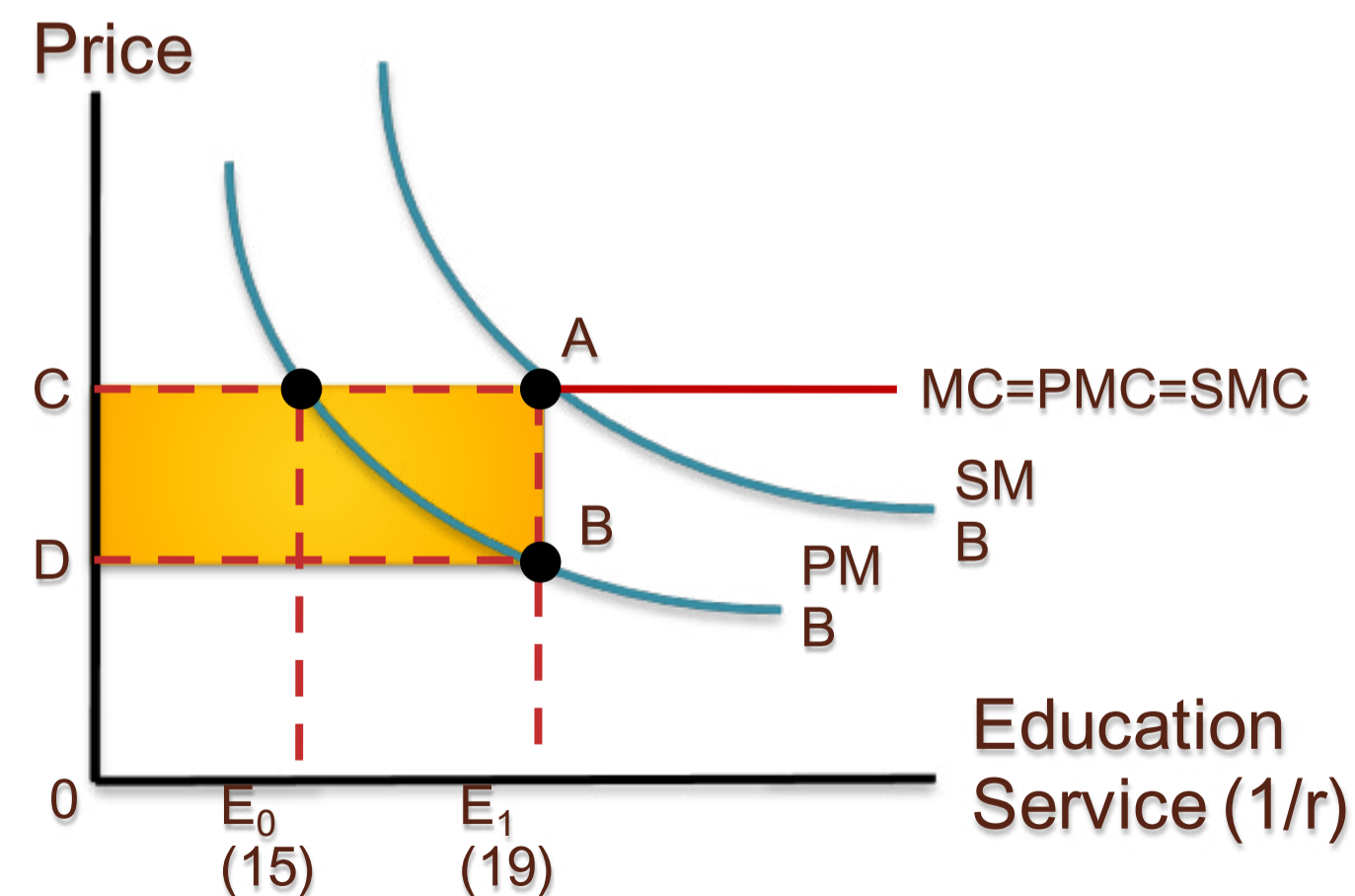

Figure 4.8

Assumption

1. Marginal cost of education constant and equal to private MC, social MC $\therefore$ MC=PMC=SMC= constant.
2. Education ⬆ ➡ Positive to social ➡ externalities

Figure 4.8 shows that private marginal benefit (PMB) or individual demand for education is less than social expectation. For instance, E_0 is a 15 years of schooling while E_1 is 19 years (university). Parent seems to invest their kids only secondary school not university.

But social benefit occur if population graduate at least university level (under graduation). Therefore, ◼ CABD should support by government or subsidy for square tuition fee student loan, Scholarship : that government should suitable level means?

Discussion

Subsidy in what level. What level should support by parent. What level should support by government.

Assignment

Find research paper related to this point and present for 5 minute.

(1) Direct Costs
(2) Indirect Costs
(3) Incremental earnings
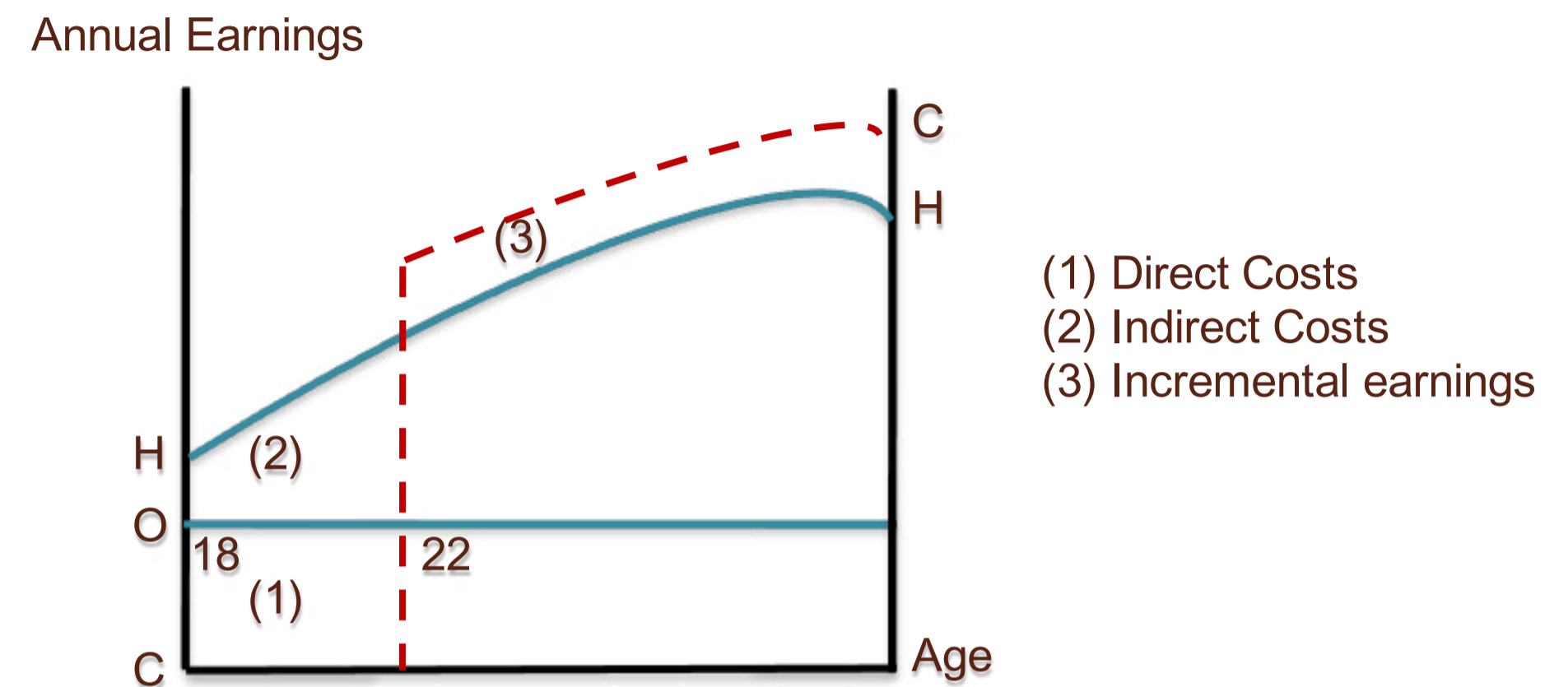
Figure 4.9 Relations between age and earnings.

Figure 4.9 shows annual earnings of individuals who participate in labor market after graduated 18 years (secondary school).
They will earn HH line. Compare with CC line which address that individuals decide to study at higher education for 4 years then they receive higher income.
(1) Show direct cost of university period.
(2) Show indirect cost that he/she lost while they are studding or the opportunity cost.
(3) Show incremental earning between secondary and university level.

Chapter 5
Human Resource
Development : Training

5.1 On-the-job-Training

➡ General Skills
➡ Specific Skills

Training has an important effect on the relation between earning and age.
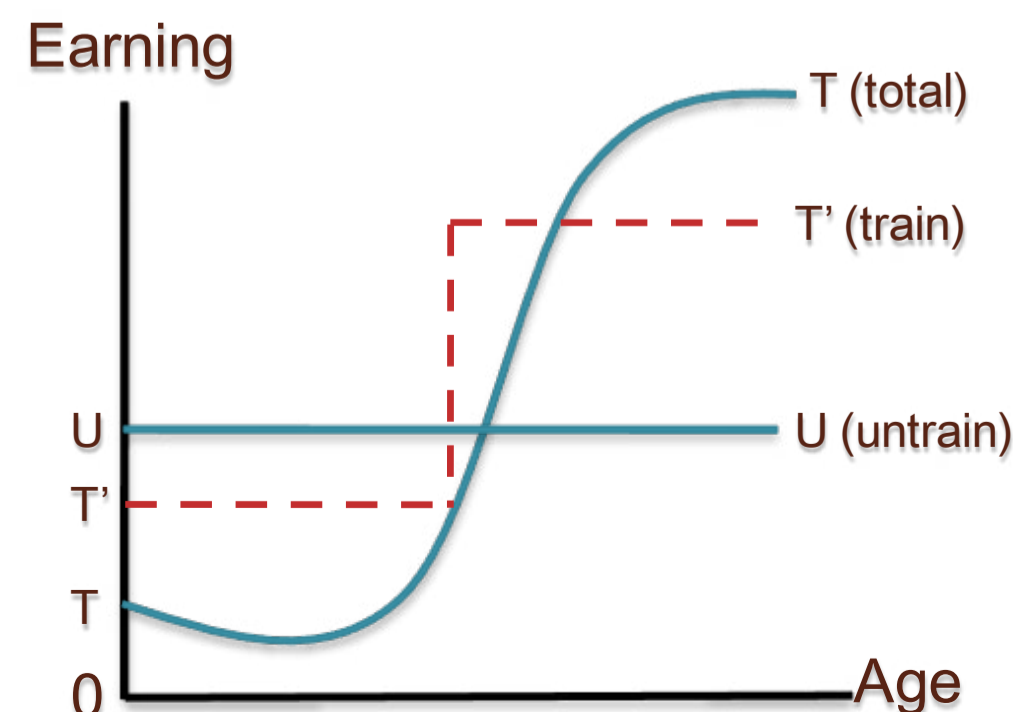
UU is an untrained persons received the same earning regardless of age.

T'T' is trained person who received lower earning during the training period because training is paid for at that time, and higher earning at later ages because the return is collected then.

TT is the combined effect of paying for and collecting the return from training in this way would be to make the age-earning curve of trained person.

5.2 Cost and Benefit

OJT is same as education. We invest in schooling before participate in labor market. Firm invest training while they are doing the job in the firm.

Family   Firm

Investment   Investment

Schooling   Training
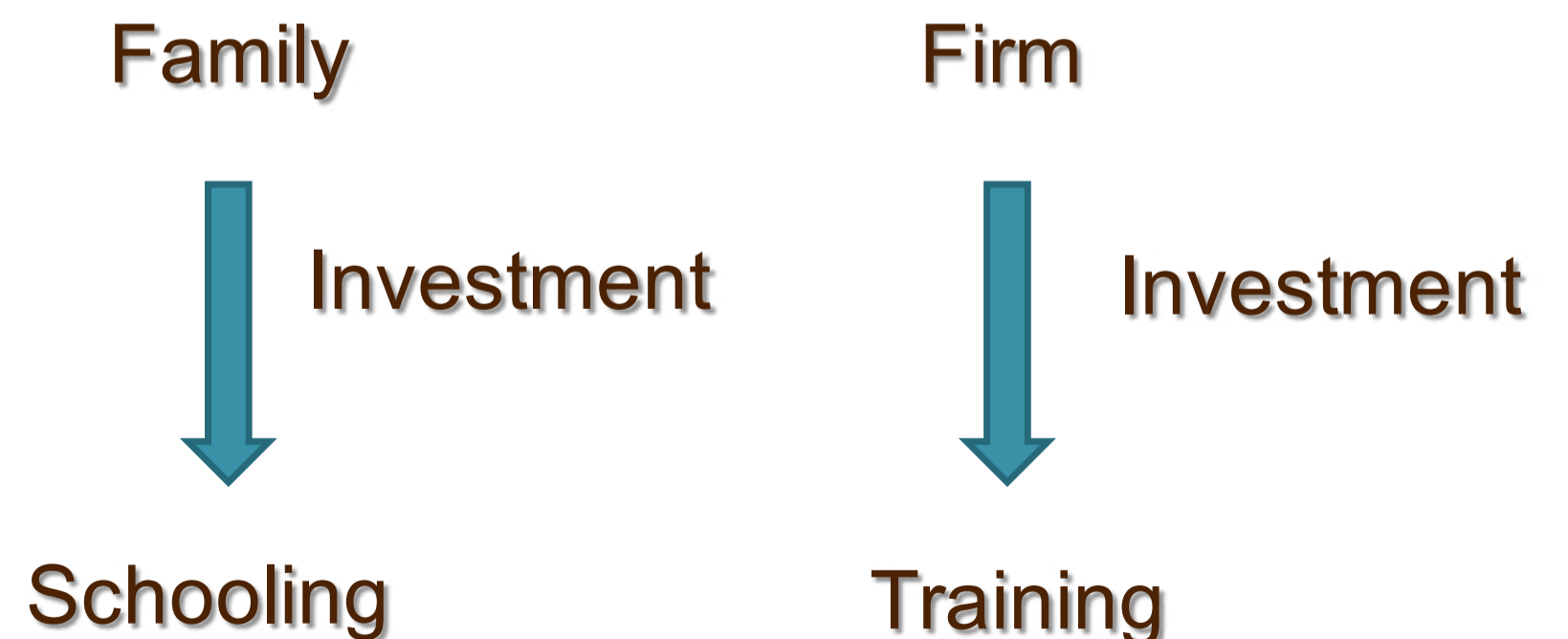
$$V_p = E_0 + \frac{E_1}{(1+i)^1} + \frac{E_2}{(1+i)^2} + \frac{E_3}{(1+i)^3} + \cdots + \frac{E_n}{(1+i)^n} \qquad (1)$$

where
V_P is present value
E is income or earning in year 0,1,2,…,n

$$V_p = \sum_{n=18}^{64} \frac{E_n}{(1+i)^{n-18}}$$

Ex Income flow 18 to 64 years, n=18,19,…
64-18=46 years

OJT
(Firm)
➕ Total Revenue ➡ IRR
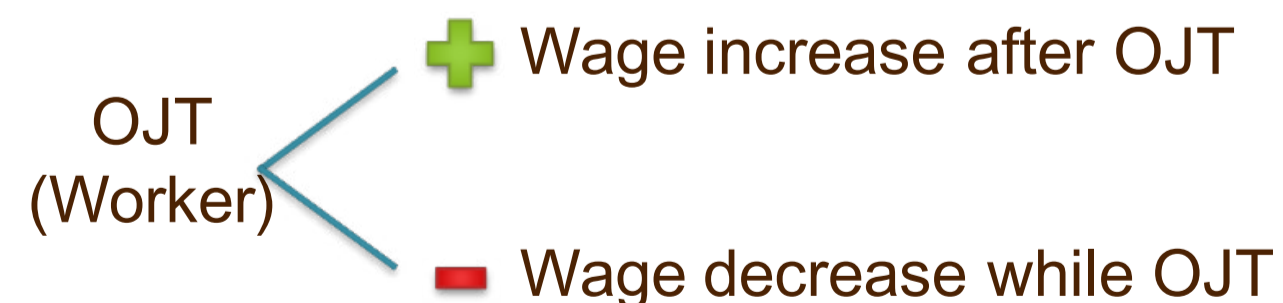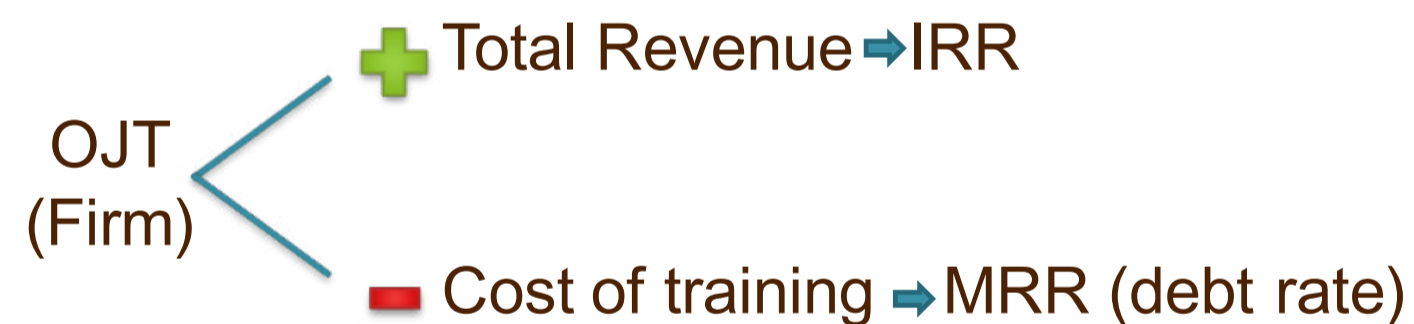➖ Cost of training ➡ MRR (debt rate)

OJT
(Worker)
➕ Wage increase after OJT
➖ Wage decrease while OJT

1) General Training
⊙ Generate general skill for any firm, e, g : administrative skill, clerk, typing and language
⊙ After training, workers have gained this benefit.
⊙ Therefore, who gain who pay for training cost.

$$W_P = MRP_p$$
where W_P = Wage of post training
MRP_P = Marginal revenue of product, post training

⊙ While training, worker receive wage lower than previous time,
$$W_t < W_u$$
W_t = Wage while training
W_u = Wage before training or wage for untrain.
⊙ This skill can transfer to other firm so worker can change their job after training if cost of transfer less than new wage.

2) Specific Training
⊙ Specific skill for specific firm.
⊙ Firm decide this training to develop firm
⊙ Firm will gain this skill form worker
⊙ Firm have to pay for specific training cost
⊙ Worker cannot use this skill in another firm
$$W_t > W_u$$

5.4 Training investment (Investment in Training)

Assumptions

    1. Perfect competition market both commodities and input market.

    2. Firm seek maximize profit, MR = MCMaximize profit

        at MR=MC

or   MP=W

other thing being equal

        $MP_t = W_t$ Affect

After firm invest in training ➡ TR

              training ➡ TC

Assume that revenue equal to cost, explain by present value in (1)

$$\sum_{t=0}^{n-1}\left[\frac{R_t}{(1+r)^{t+1}}\right]=\sum_{t=0}^{n-1}\left[\frac{E_t}{(1+r)^{t+1}}\right] \quad (1)$$

where, E_t = cost of training in period "t"

            R_t = revenue from training in period "t"

            r = interest rate

            n = number of period (or t=0,1,2,…)

If MP and wage are equal in the same time then.
Summation of PV of MP should equal to summation of PV of wage.

$$\sum_{t=0}^{n-1}\left[\frac{MP_t}{(1+r)^t}\right]=\sum_{t=0}^{n-1}\left[\frac{W_t}{(1+r)^t}\right] \quad (2)$$

Firm provide training course with cost "K".
Firm still pay for wage while training.
So total cost that firm taking into account that show

    W_0 +K ➡ cost of training
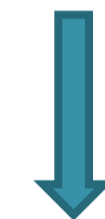
wage before training

consider (2) after training

$$MP_0+\sum_{t=0}^{n-1}\left[\frac{MP_t}{(1+r)^t}\right]=W_0+\sum_{t=0}^{n-1}\left[\frac{W_t}{(1+r)^t}\right] \quad (3)$$

initial MP marginal product after training   initial wage   wage after training

        firm gain   firm pay

If cost of training = K then plus K into (3)

$$MP_0 + \sum_{t=0}^{n-1}\left[\frac{MP_t}{(1+r)^t}\right] = (W_0 + K) + \sum_{t=0}^{n-1}\left[\frac{W_t}{(1+r)^t}\right] \quad (4)$$

rearrange (4),

$$MP_0 + \sum_{t=0}^{n-1}\left[\frac{MP_t}{(1+r)^t}\right] - \sum_{t=0}^{n-1}\left[\frac{W_t}{(1+r)^t}\right] = W_0 + K$$

$$(5)$$

$$MP_0 + \sum_{t=0}^{n-1}\left[\frac{MP_t - W_t}{(1+r)^t}\right] = W_0 + K$$

define $\quad G = \sum_{t=0}^{n-1}\left[\frac{MP_t - W_t}{(1+r)^t}\right] \quad (6)$

G is net present value from training that firm gainso from (5) we obtain,

$$\overline{MP_0} + G = W_0 + K \quad (7)$$

when, $\overline{MP_0}$ is MP without training and
MP_0 is MP while training

therefore, $MP_0 - \overline{MP_0}$ is an opportunity cost of training (7')

from (7')
$$MP_0 + G = W_0 + (K + (MP_0 - \overline{MP_0}))$$

direct cost   indirect cost

define $\quad K + (MP_0 - \overline{MP_0}) = C$

C = cost of training + opportunity cost of training so, C is total economic cost of training

then
$$MP_0 + G = W_0 + C \quad (8)$$

gain from OJT   loss from OJT

5.5 General Training

from (6) When MPt equal to Wt due to training,

$$G = \sum_{t=0}^{n-1}\left[\frac{MP_t - W_t}{(1+r)^t}\right] = 0 \quad (9)$$

then (8) obtain,
$$MP_0 = W_0 + C \quad (G=0) \quad (10)$$
or $\quad W_0 = MP_0 - C \quad (11)$
from (7) $\quad MP_0 = W_0 + K \quad (G=0) \quad (12)$
or $\quad W_0 = MP_0 - K \quad (13)$

Wage after training less than marginal product due to worker have to pay for general training. Firm will not pay for this training because general training will provide benefit to worker directly not benefit to firm. Worker can employ their skill (general skill) to any firm. Worker have to pay by themselves.

5.6 Specific Training

MP_0' + G = W_0 + C   (14)

where, MP0' is opportunity cost of marginal product while training

    W_0 is wage

    C   is cost of specific training at

      initial period (then C = G)

$$G = \sum_{t=0}^{n-1} \left[\frac{MP_t - W_t}{(1+r)^t} \right]$$

so,

    $(MP_t - W_t)$ is a net present value of net return on specific training

from (14) at initial period of training, G = C

Later, firm will obtain benefit from specific training. Specific means fit to this firm (only). To reduce risk from labor turnover, firm have to pay higher wage.

    Specific Training MP_L Wage

From (14) define

    ▶ G is net present value from training, received by firm

    G_1 is net present value from training,received by worker

    G_2 is total net present value firm training ◀

Therefore,

    G_2 = G + G_1

at equilibrium G_2 = C   (TR=TC)

define a as a proportion of total net present value from training.

Therefore,   G = aG_2 , G_2 = C so G = aC

Rewrite (14)

    MP_0' + aC = W_0 + C   (15)

    W_0 = MP_0' + aC – C

    W_0 = MP_0' + C(a-1)

    W_0 = MP_0' - C(1-a)

    W_0 = MP_0' - (1-a) C   (16)

Opp. cost of MP while training   Proportion of net present value obtained by worker   Total economic cost of training

From (16) in cost of general training a = 0

    W_0 = MP_0' - C   (17)

in case of specific training a = 1

    W_0 = MP_0' (18)

in case of semi-general and semi-specific

    0 < a < 1

Chapter 6

Investment in
Migration

6.1 Introduction

6.2 Economics Concept in Migration

6.3 Cost – Benefit Analysis

6.4 Problem of growth and population

6.5 High Quality Worker Shortage and Migration

6.1 Introduction (Lee,1966)

Why migration

    1. Beginning place push

    2. Destination pull

    3. Threats at beginning and destination
       while migrate

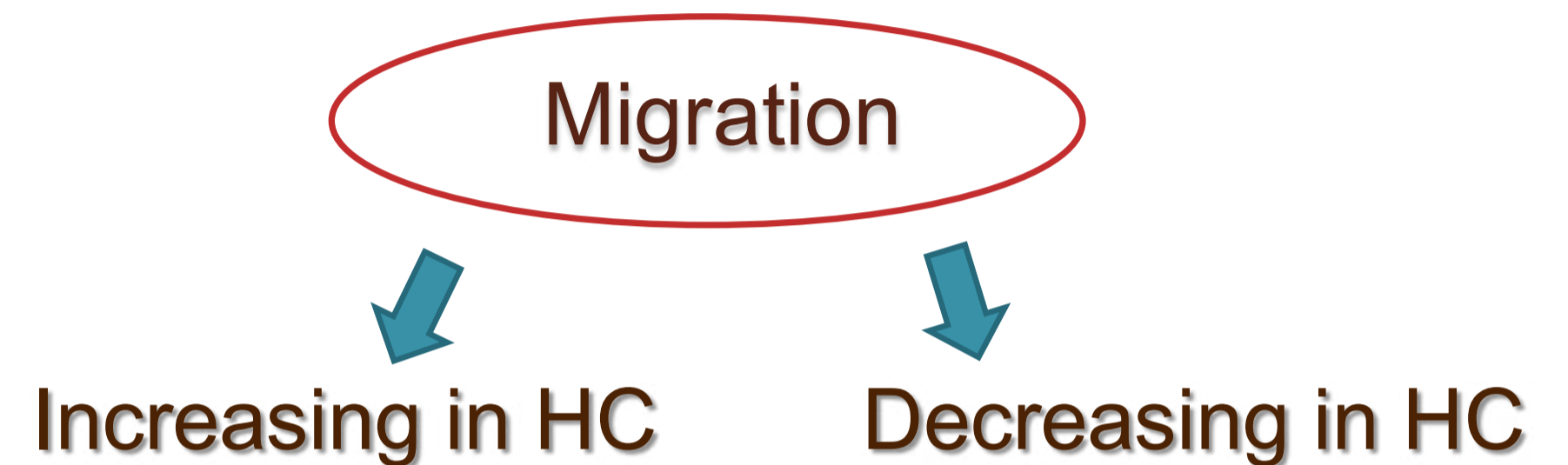   4. Personal reason

Beginning

Destination

General Reason of Migration is difference of economy between 2 places. Labor to move from poor to rich economy. (relative economy)

Donald J. Boque (1969) state that migration has two reasons. Push and pull are explanation for that.

Migration

Increasing in HC   Decreasing in HC

Sjaastad (1962) state that after European people migrate to north America, net benefit has increased by human capital those come from migration. Likewise, Speare (1969) also confirm results in case of Taiwan's domestic migration.

6.2 Economics Concept in Migration

1) Economic Environment
    By the cardinal utility theory, consumer compare two commodity then choose one whichprefer rather than another. Likewise, worker who judge two places. Decide to work at the place where will gain higher in economic environment.

Content 47

2) Investment in Human Capital

Old and new place have different quality ofeducation and training. Therefore, worker maychoose to live in urban rather than rural area.

6.3 Cost and Benefit Analysis

Assumption

1. Period of migration = t

where, t = 1,2,3,…n-1,n

if worker have X years old when they migrate to new place, t = X, X+1, X+2, X+3,…n-1,n

and worker have Y years old when they migrate from new place = Y,

t = X ,X+1, X+2,…,Y-X-1, Y-X

e.g. worker who live in new place until 60 years old and he stop his work after 60 years old. He was 20 years old at beginning.

t = X, X+1,…59-X, 60-X

t = 20,21,…59-20,60-20

2. Employ value in term of present value

6.3.1 Cost

1) Direct Cost

◎ Summation of all expenditures while they are moving from old place to new one.

◎ For example, tranportation, rent, personal expense, family expense (include member's expenditure)

Direct cost cover the cost after they went to new place, e.g., cost of searching a new job, resident, etc.

$$E_t = E_1, E_2, E_3, \dots E_{n-1}, E_n$$

where E_t = Expenditure at t period

t = 1,2,3,…n-1,n

In present value,

$$E_t = \frac{E_1}{(1+r)} + \frac{E_2}{(1+r)^2} + \frac{E_3}{(1+r)^3} + \dots + \frac{E_{n-1}}{(1+r)^{n-1}} + \frac{E_n}{(1+r)^n}$$

where r is internal rate of return

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

2) Indirect Cost or Opportunity Cost, "0", and Psychic Cost, "P"

benefit (in old place)   cost of adaptation to
loss from migration   new social

Total Cost = Direct Cost + Indirect Cost

$$TC = D + \sum_{t=1}^{n} \frac{E_t}{(1+r)^t} + O + P$$

(1)

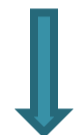## Direct Cost

6.3.2 Benefit

1) Direct Benefit "I"

$$I_t = I_1, I_2, I_3, \ldots I_{n-1}, I_n$$

present value,

$$I_t = \frac{I_1}{(1+r)} + \frac{I_2}{(1+r)^2} + \frac{I_3}{(1+r)^3} + \ldots + \frac{I_{n-1}}{(1+r)^{n-1}} + \frac{I_n}{(1+r)^n}$$

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

e.g. new salary, new income,…

2) Indirect Benefit "R"

⬇

Psychic Return or Psychic Benefit

e.g. self esteem, self confident, pround,…

$$TB = \sum_{t=1}^{n} \frac{I_t}{(1+r)^t} + R \qquad (2)$$

6.3.3 IRR

From (1) and (2)

IRR = NPV = 0   (r=?)

$$\left[\sum_{t=1}^{n} \frac{I_t}{(1+r)^t} + R \right] - \left[D - \sum_{t=1}^{n} \frac{E_t}{(1+r)^t} + O + P \right] = 0 \quad \text{Find r = 0}$$

Consider direct cost and direct benefit

$$\sum_{t=1}^{n} \frac{I_t}{(1+r)^t} - \left[D + \sum_{t=1}^{n} \frac{E_t}{(1+r)^t} \right] = 0$$

$$\boxed{\sum_{t=1}^{n} \frac{I_t}{(1+r)^t} = D + \sum_{t=1}^{n} \frac{E_t}{(1+r)^t}} \qquad (3)$$

r=?

6.4 Problem of growth and population

1) Economic Environment

By the cardinal utility theory, consumer compare two commodity then choose one whichprefer rather than another. Likewise, worker who judge two places. Decide to work at the place where will gain higher in economic environment.
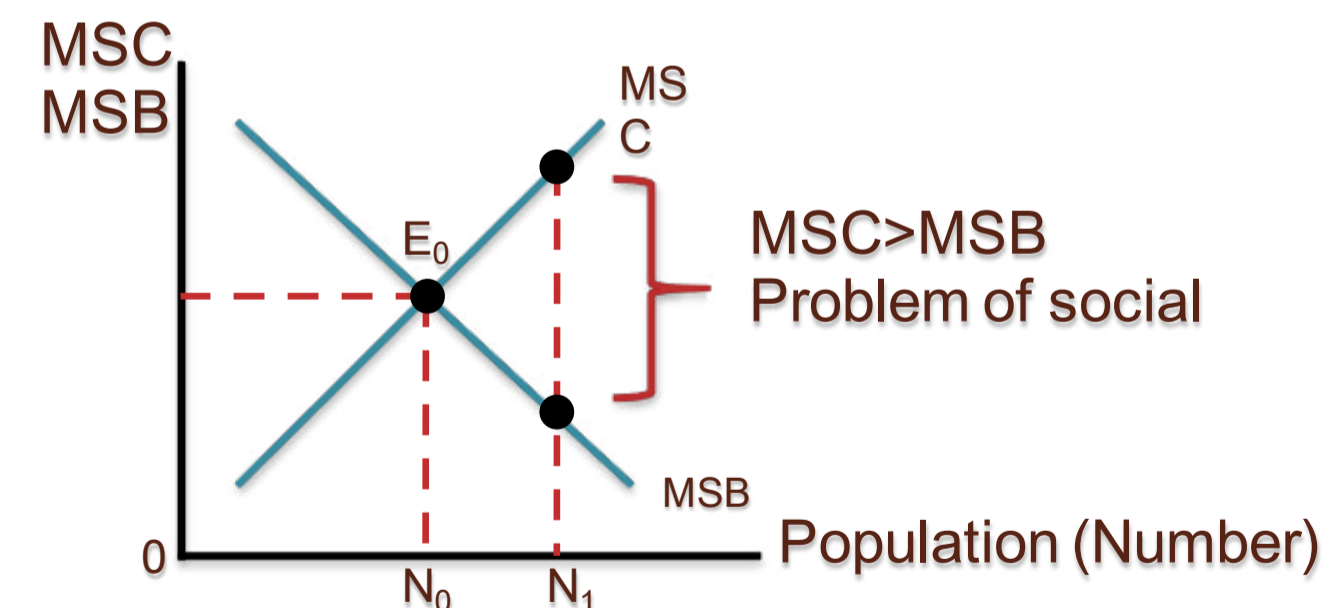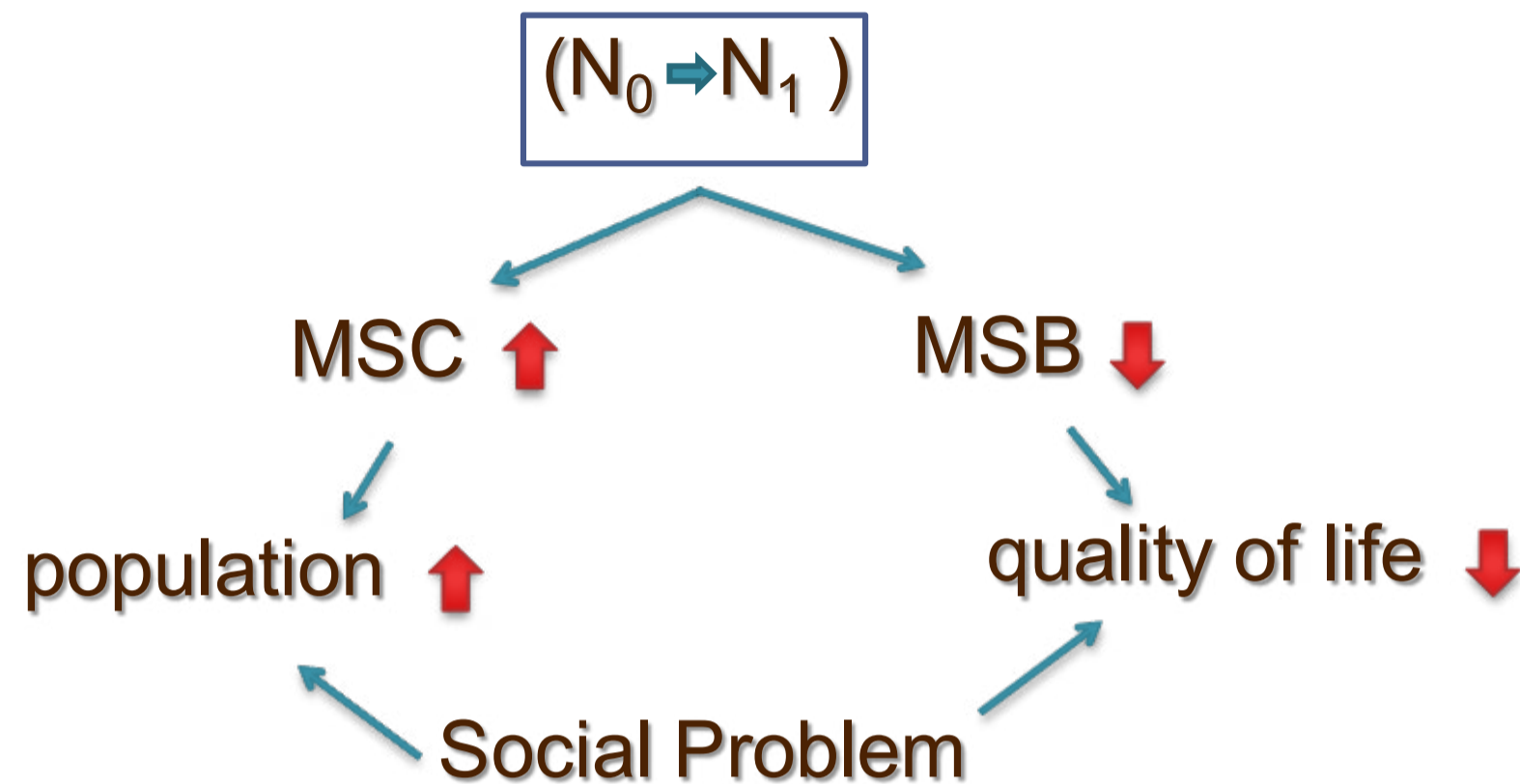

Figure 6.1

From figure 6.1 sup post that E_0 is an initial point. Marginal Social Cost (MSC) equal Marginal Social Benefit (MSB).

After population migrated from rural area to urban area ($N_0 \rightarrow N_1$). The equilibrium, E_0, disappear due to increasing in population. MSC>MSB or cost of social increase while social benefit decrease.

$$(N_0 \rightarrow N_1)$$

MSC ⬆

MSB ⬇

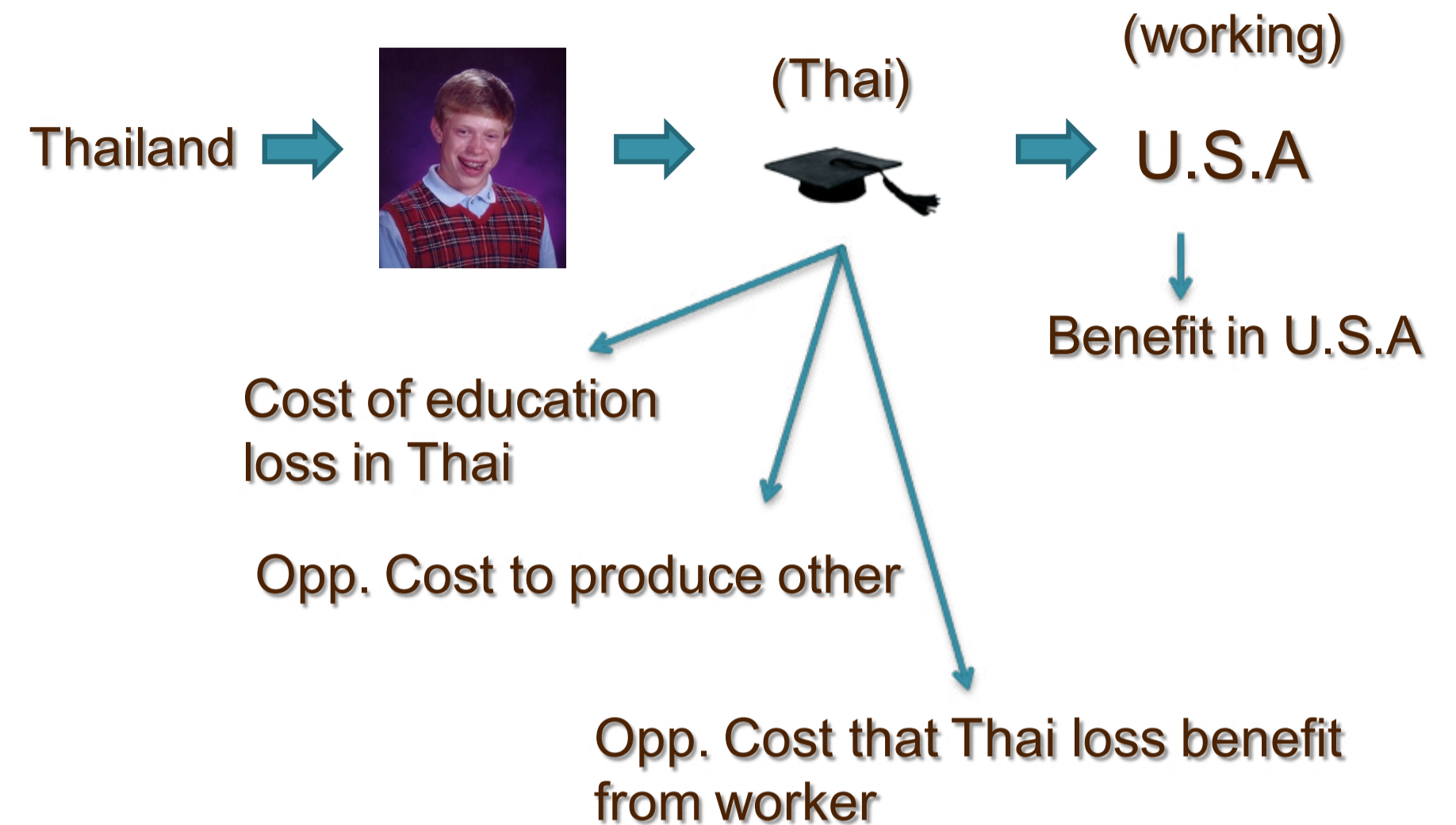population ⬆

quality of life ⬇

Social Problem

6.5 High Quality Worker Shortage and Migration

General problem in developing country is high performance worker tend to migration to developed country.
Because,
1) Differential in quality of life
　　From Thai　to Camada
　　　　　　　to New Zealand
　　　　　　　to U.S.A
2) Higher Income
3) Higher Education
4) Some intangible threats, law, IT, limitation, economic instability
5) Other i Attitude, Environment,…

Case

Thailand ➡ [image] ➡ (Thai) 🎓 ➡ (working) U.S.A

Benefit in U.S.A

Cost of education loss in Thai

Opp. Cost to produce other

Opp. Cost that Thai loss benefit from worker

Case study from Mary Jean Bowman and Robert G. Myers,
1. MR. J was born in A and do not migrate to B for study work.

$$PV_j = \sum_{t=a}^{n} \frac{(I_t - E_t)}{(1 + r)^{t-a}}$$

I_t　is Benefit in year t
E_t　is Direct cost in education/training before migration
a　is age at beginning to migrate

2. MR. J Migration to new place.

$$PV_j = \sum_{t=a}^{n} \frac{(II_t - EE_t - D_t)}{(1+r)^{t-a}}$$

where,

II_t is Benefit at new place

EE_t is Cost of education/training at new place

D_t is Direct cost of migration

a is age at beginning

3. MR. J go to new place and come back old place

$$PV_j = \sum_{t=a}^{m-1} \frac{(II_t - EE_t - D_t)}{(1+r)^{t-a}} + \sum_{t=m}^{n} \frac{(III_t - DD_t)}{(1+r)^{t-m}}$$

NPV at new   NPV at old

where,

III_t is Benefit after come back

DD_t is Cost of come back

m is age at come back

4. MR. J has lived in old place then migration to new place.

$$PV_j = \sum_{t=a}^{b-1} \frac{(I_t - E_t)}{(1+r)^{t-a}} + \sum_{t=b}^{n} \frac{(II_t - EE_t - D_t)}{(1+r)^{t-b}}$$

(old)   (new)

where,

b is date of migration

5. MR. J stay in old place for a while and move new place finally, come back to old place.

$$PV_j = \sum_{t=a}^{b-1} \frac{(I_t - E_t)}{(1+r)^{t-a}} + \sum_{t=b}^{m-1} \frac{(II_t - EE_t - D_t)}{(1+r)^{t-b}} + \sum_{t=m}^{n} \frac{(III_t - DD_t)}{(1+r)^{t-m}}$$

(old)   (new)   (old)

Chapter 7 Investment in Health

7.1 Education and Health : Similarities and Differences

Mushkin (1962) state that "the concept of human capital formation through both education and health services rests on the twin notions that people as productive agents are improved by investment in these services and that the at lays made yield a continuing return in the future.

◉ Health and education are joint investment made in the same individual.
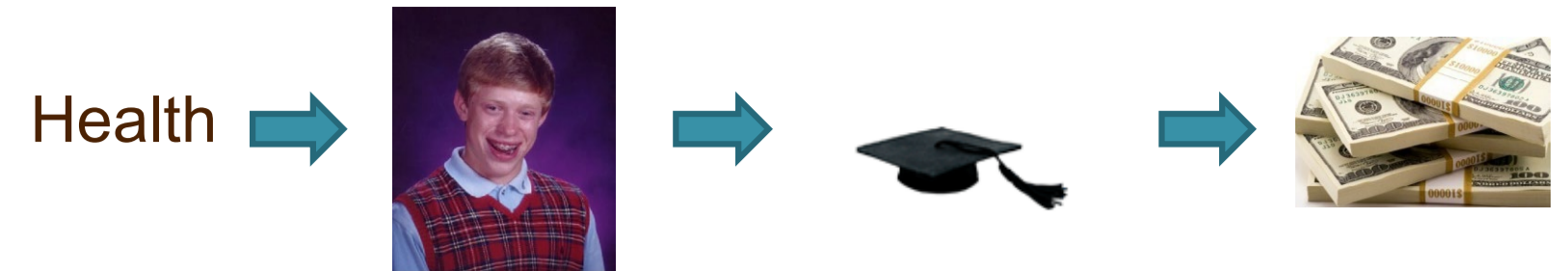
Health ➡ ➡ ➡

Good Health ➡ Higher Education ➡ Higher Wage

● How to invest in health ?

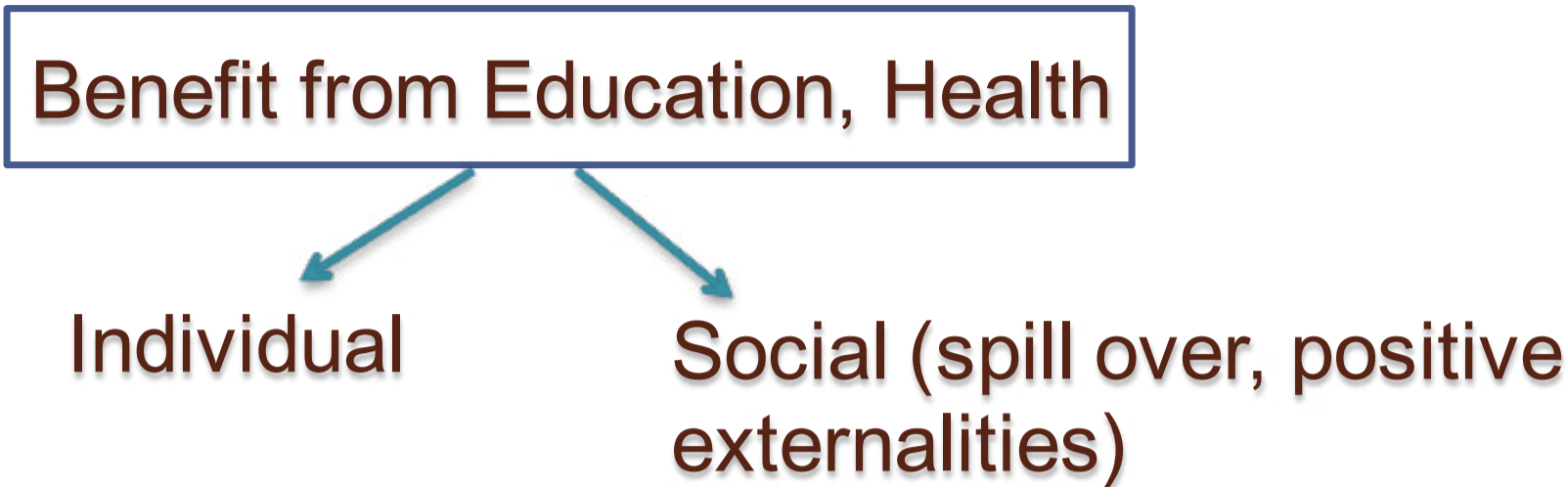Investment in Health

by public sector   by private sector

◉ Which way show the most effectiveness ?

Similarities between education and health are

1. Education and health are mutual investment for instance, some health are service depend on level of education. If low quality of education then, inefficient in quality of health care.On the other hand, low quality of health care related to low quality of education. Children who always get sick so the always absent from the class room. High quality of health care lead to have long live then, long period to earn

2. Difficult to define health into consumption or investment. Likewise, education that also difficult to separate. For instance, MR.A eat paracetamol to decline his headache. It seems to be he consume the medicine for his utility. However, after he drug paracetamol he can go to work and earn from the working. Last case like MR. he drug for investment but first case he drug for consumption.

3. Both education and health are positive externalities.

<div style="border:1px solid">Benefit from Education, Health</div>

Individual   Social (spill over, positive externalities)

4. Low IRR in education and health investment but high growth rate in term of economic.

Ex

Good health ➡ Birth rate ⬆ ➡ Labor ⬆ ➡ MP_L ⬆

(quantity)

High education ➡ HC ⬆ ➡ MP_L ⬆ ➡ W ⬆ ➡ GDP ⬆

7.2 Difference between education and health

1. Good health ➡ Quality ➡ Quality of life
   ➡ Quality ➡ MP_L
   High education ➡ Quality ➡ MP_L
2. Cannot measure in unit of health
   Can measure in unit of education ➡ years of schooling
3. According to 2. so we cannot present on health investment. Education can show number of rate of return in each level of schooling.

4. Difference in cost perspective.

Higher Education

Cost

Secondary
Elementary

High cost
High QOL

Health
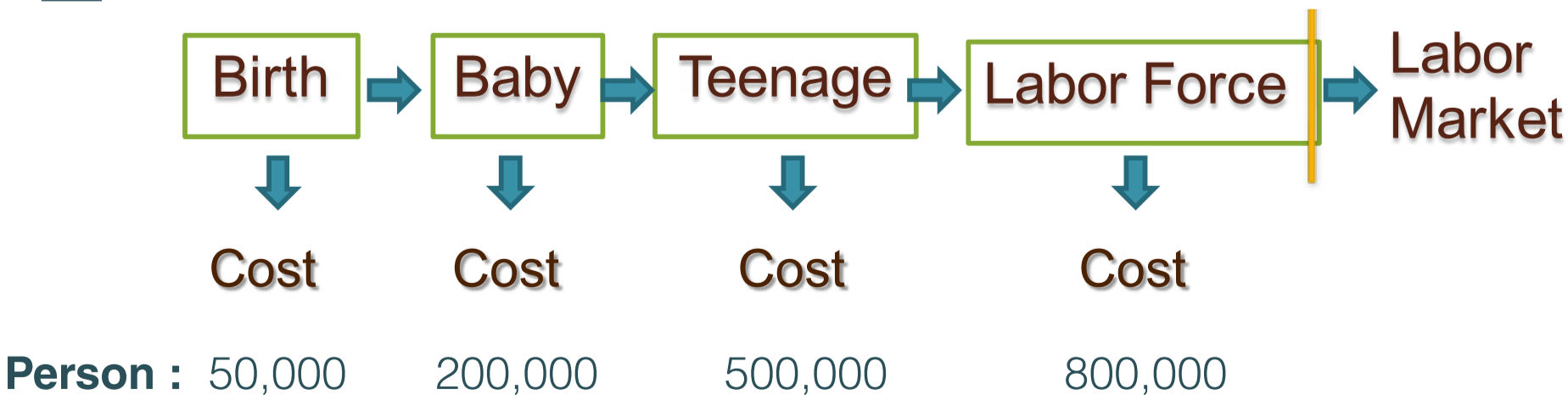
Low cost
Low QOL
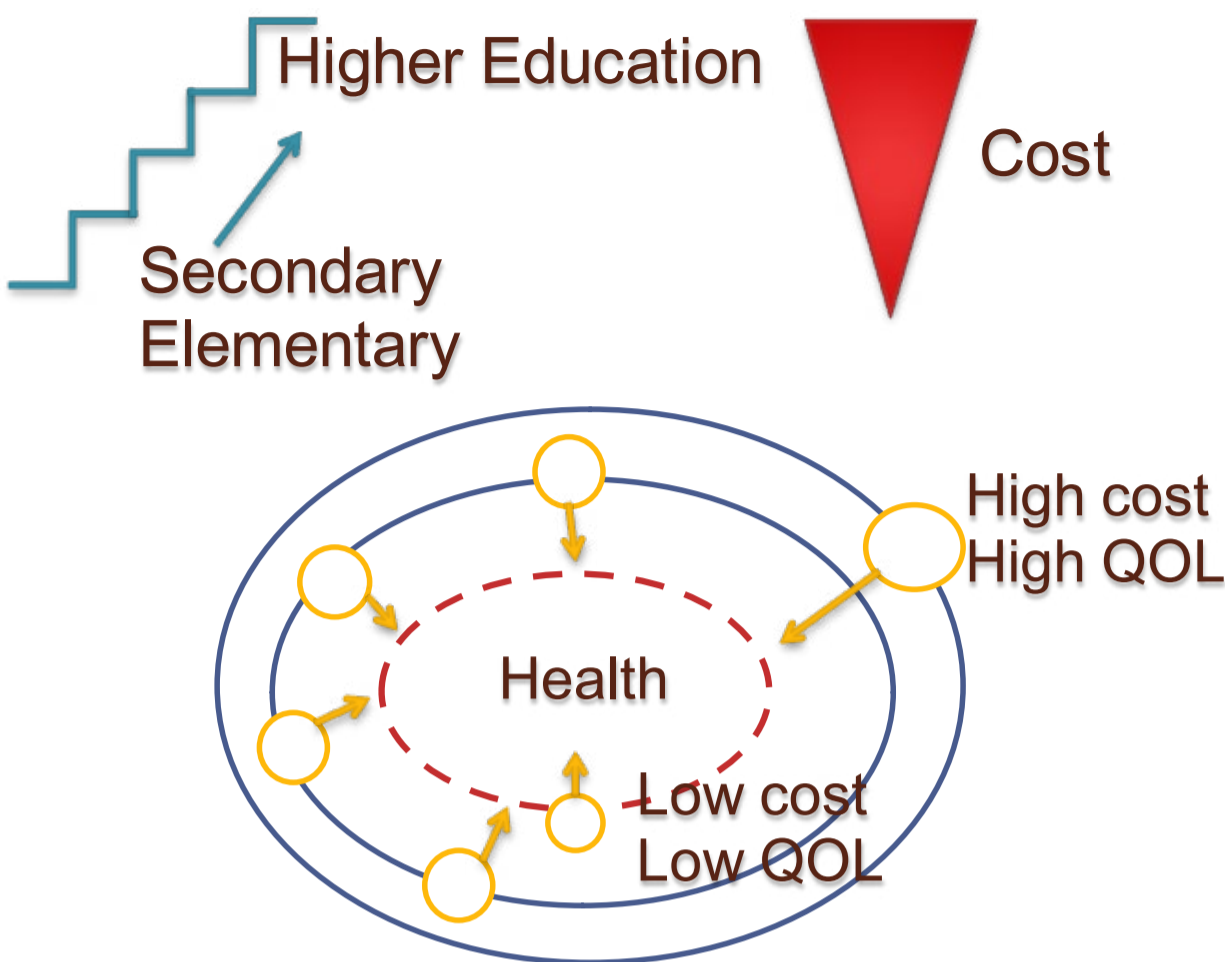
7.3 Return on health investment by concept of HC

From for reasons above, we consider that hew difficult to analysis the health investment.
     1) Cost concept economists try to calculate stock of health from cost of health care.

Ex

Birth ➡ Baby ➡ Teenage ➡ Labor Force ➡ Labor Market

Cost   Cost   Cost   Cost

Person : 50,000   200,000   500,000   800,000

Micro Level
    TC = 50,000+200,000+500,000+800,000
    TC = 1,550,000 per person
Macro Level
    population = 60,000,000 person
    ∴ TCM = 93×10^{12} Million Baht
Human capital in term of health we can measure through by cost of illness.

2) Utility concept
    Use willingness to pay (WTP)
  ◉ How much to pay to protect the illness
  ◉ How much to pay for the compensation in case of hazard job

Questionnaire   Administration
are worker   Interview

3) Cost – Benefit Analysis
    There are two indicate to measure health project.

    3.1) Benefit/Cost Ratio (B/C Ration)

$$B/CRation = \frac{\sum_{t=0}^{n} \frac{B_t}{(1+r)^t}}{\sum_{t=0}^{n} \frac{C_t}{(1+r)^t}}$$

where,
        B_t is benefit in year t
        C_t is cost in year t
        t   is year
        r   is interest rate

If B/C Ratio > 1

This project is worthwhileness

3.2) Net Present Value (NPV)

$$NPV = \sum_{t=o}^{n} \frac{B_t - C_t}{(1+r)^t}$$
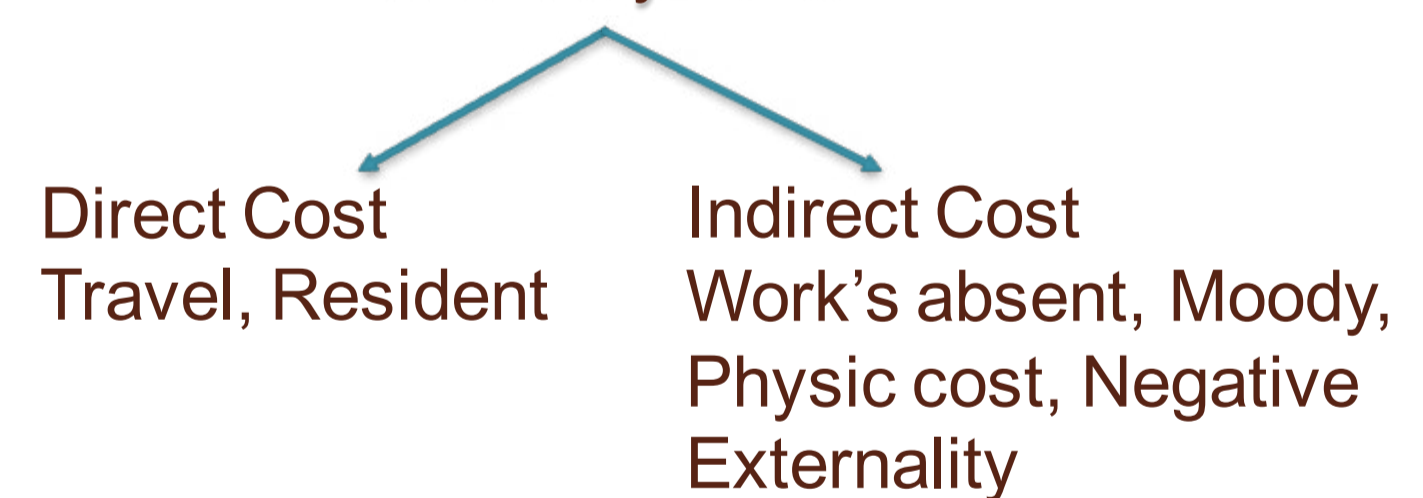
where,
        NPV – net present value
    If NPV > 0 This project is worthwhileness

3.3) Cost – Benefit in health project
Cost
    1. Administrative Cost : Staff, equipment, pill, capital, etc.
    2. Patiant and their family expenditure : travel cost, loss fro, work's absent, phychic cost
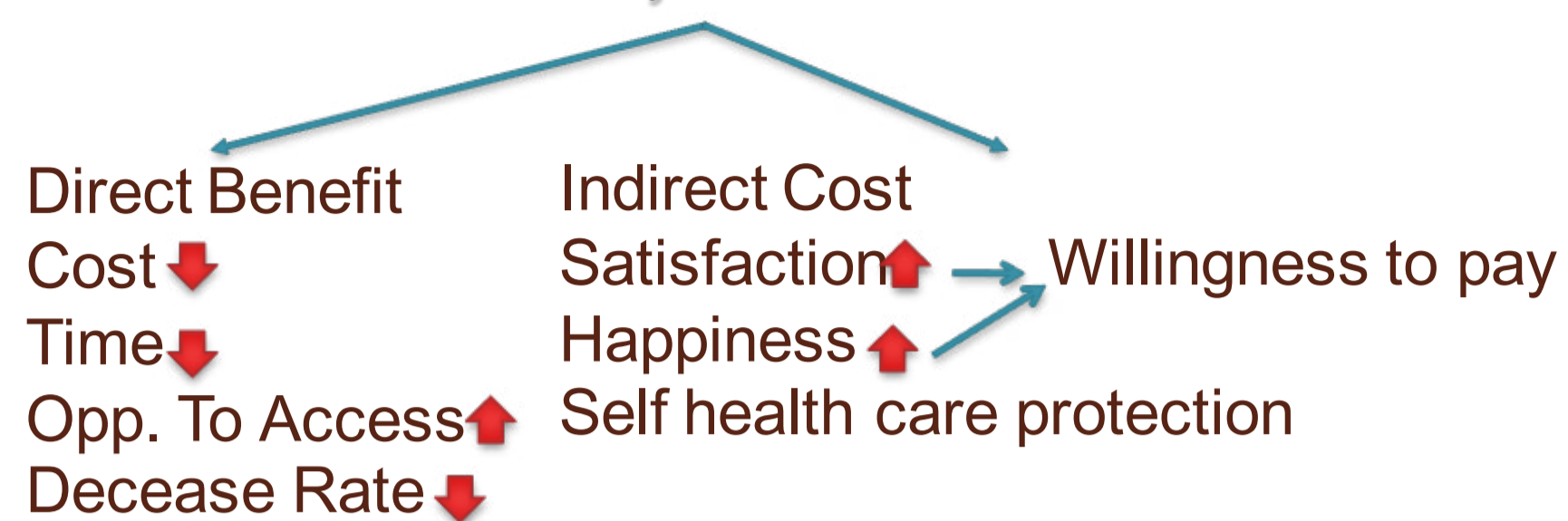   3. External/Tertiary cost

Summary : Cost

Direct Cost   Indirect Cost
Travel, Resident   Work's absent, Moody,
                            Physic cost, Negative
                            Externality
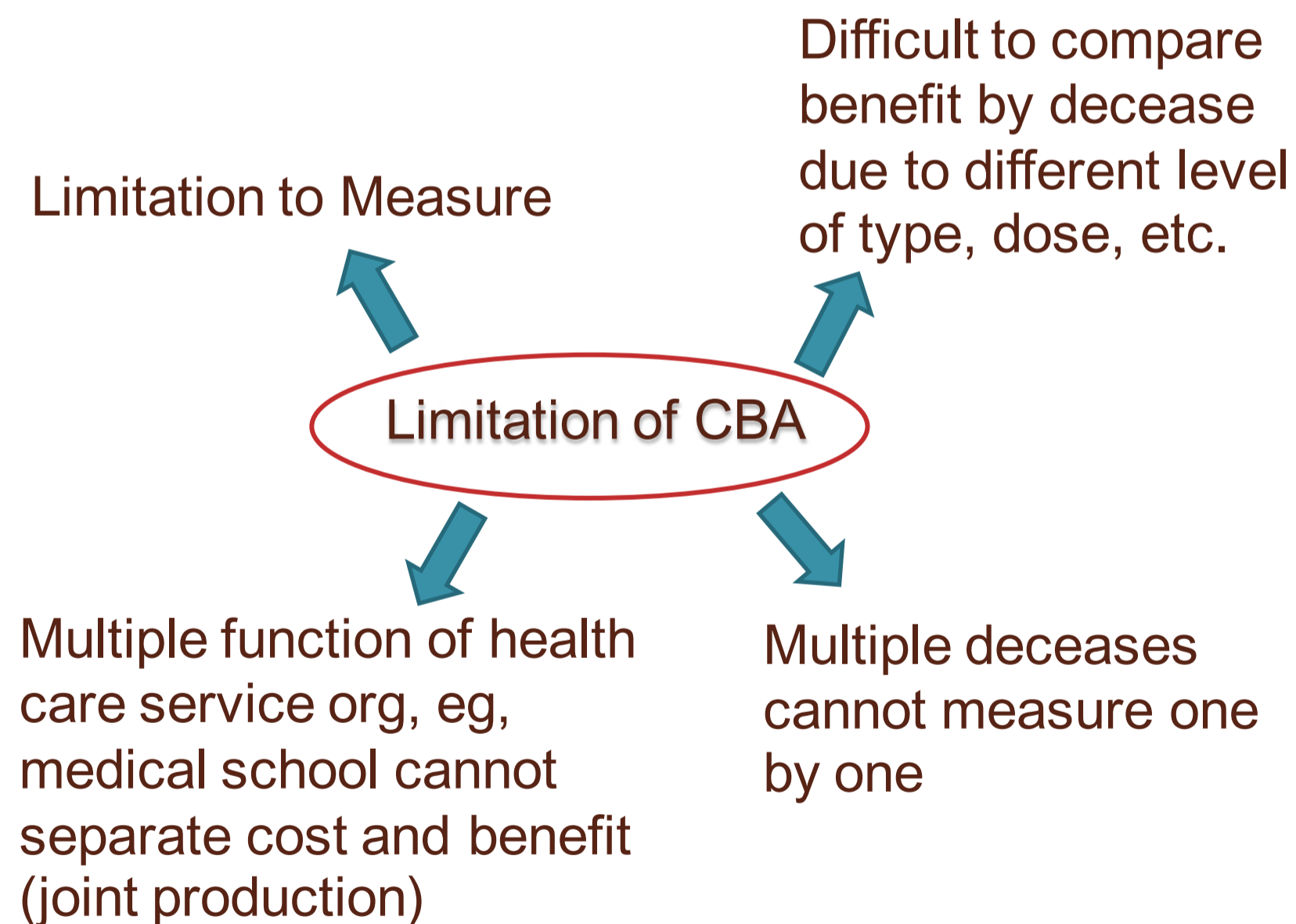
Benefit
    1. Resource Efficiency : Reduce Cost, Reduce Time, Increase Opportunity to Access Health Care Service
    2. Increase Utility, Satisfaction
    3. Decrease Depression, Unhappy
   4. Positive Externality

Summary : Benefit

Direct Benefit
Cost ⬇
Time ⬇
Opp. To Access ⬆
Decease Rate ⬇

Indirect Cost
Satisfaction ⬆ → Willingness to pay
Happiness ⬆
Self health care protection

3.4) Limitation of CBA

Limitation to Measure

Difficult to compare benefit by decease due to different level of type, dose, etc.

Limitation of CBA

Multiple function of health care service org, eg, medical school cannot separate cost and benefit (joint production)

Multiple deceases cannot measure one by one

---

4) Cost – Effectiveness Analysis (CEA)

◉ Choose the alterative which minimize cost

Limitation of CEA

Join production

Rent/Shadow price

Date base collection is not up to date
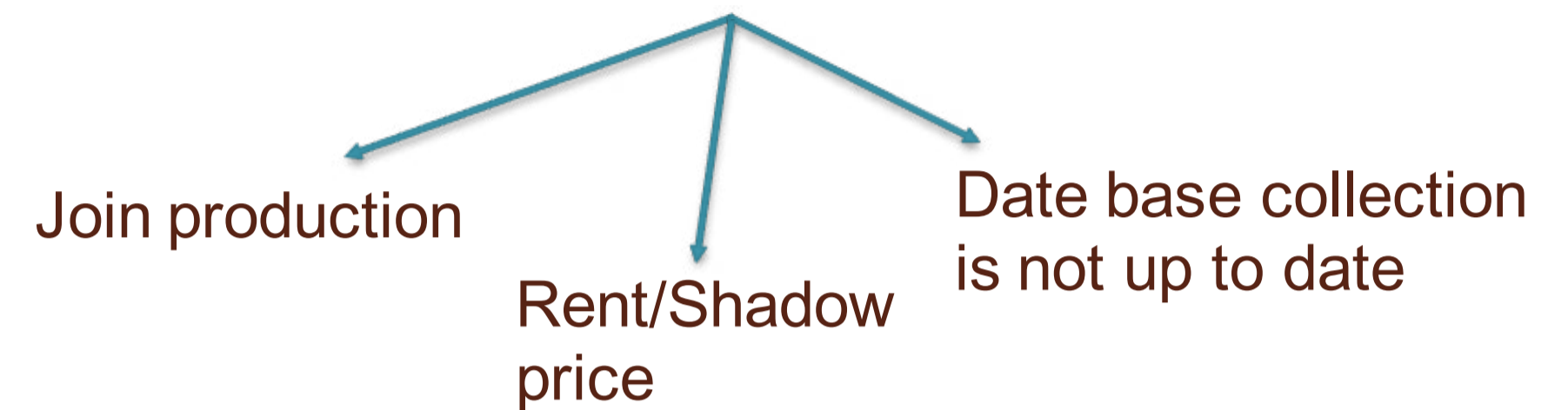
Chapter 8 Manpower Planning

8.1 General Concept of Manpower Mobility

General Concept of Manpower Mobility

1. Occupation Mobility

2. Industrial Mobility

3. Geographical Mobility (Migration) Factor

8.2 Relation between Mobility and Demographic

1) Mobility and Age

Mobility

0   Age
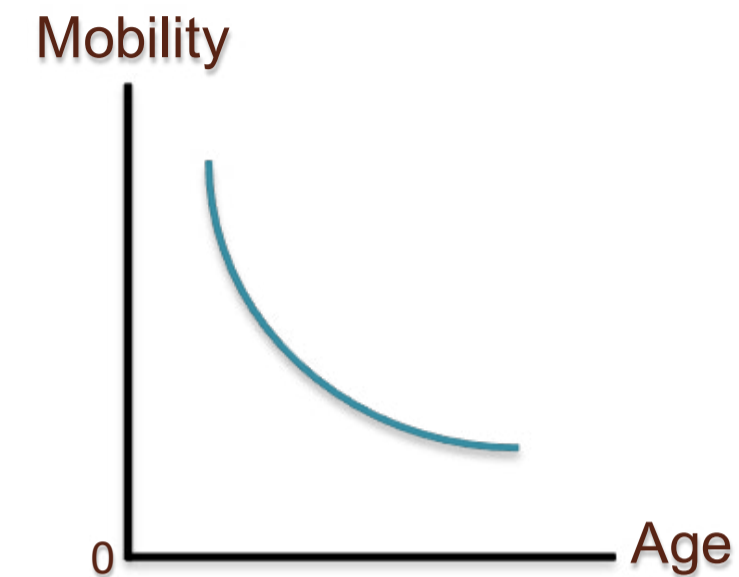
Young labor tends to move to new place rather than old one.

Reasons
  ◉ New experience pull
  ◉ Low information
Age more than 35 years old have low mobility
Reasons
  ◉ Relationship in old place ➡ social capital
  ◉ Stability needs ➡ risk aversion
 ◉ Accumulation of benefit in old place : bonus, welfare, security

8.3 Relation between Mobility and Family Status

◉ Leader in family tends to be low mobility compare with family member.

◉ Young leader tend to be high mobility due to economic reason. Some of them have young baby, while his wife have to take care their kid. So the husband have to move to another place, eg. from rural to urban.

8.4 Relation between Mobility and Occupation (skill)

High specific skill ➡ Small labor market ➡ Low mobility ➡ Inelasticity ➡ in supply of labor (high wage, quite stable).
Low skill ➡ High mobility ➡ not stable in employment

High Mobility   Low Mobility

High performance   Specific skill

General skill   Low performance
(some)   (some)
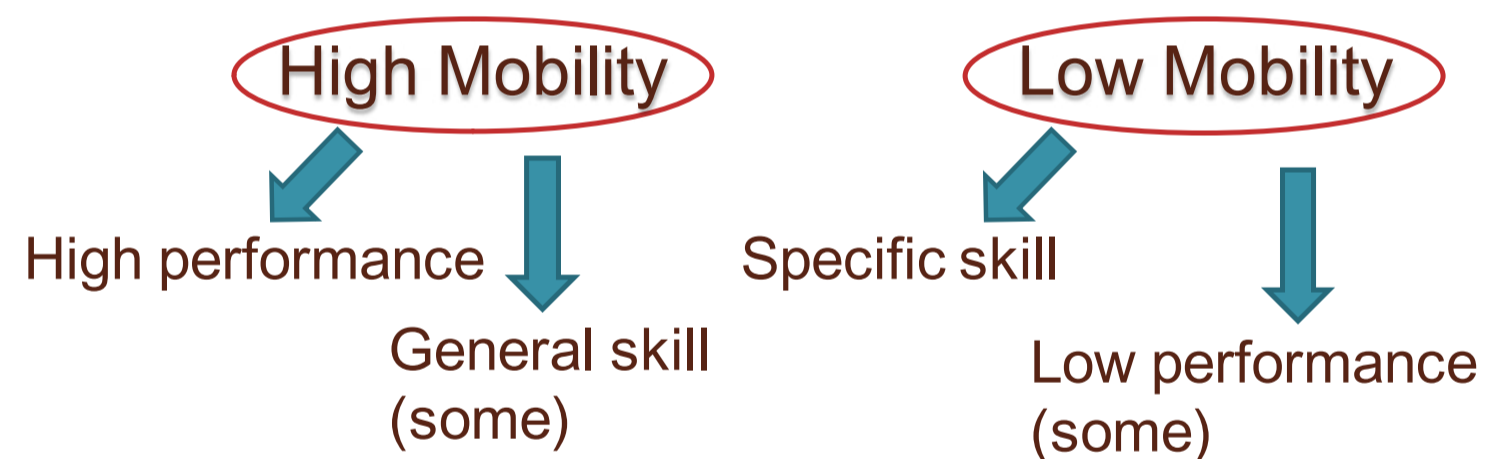
8.5 Relation between Mobility and Education

◉ Higher year of schooling.

advantage in receive/access to ➡ information higher opportunity
◉ high level of education ➡ high performance to adaptive changing ➡ higher opportunity in labor market

8.6 Human resource and Economic Development

1) Quality of Human Resource

By law of diminishing return stable that in all productive processes adding more of one factor of production, while holding all other constant ("Ceteris Paribus"), will at some point yield lower per-unit return (John Heinirich von Thünen, Turgot, Jame Steuart, Thomas Malthus and David Ricado).

In case of increase quality of human resource, the production could increase even constant physical capital.
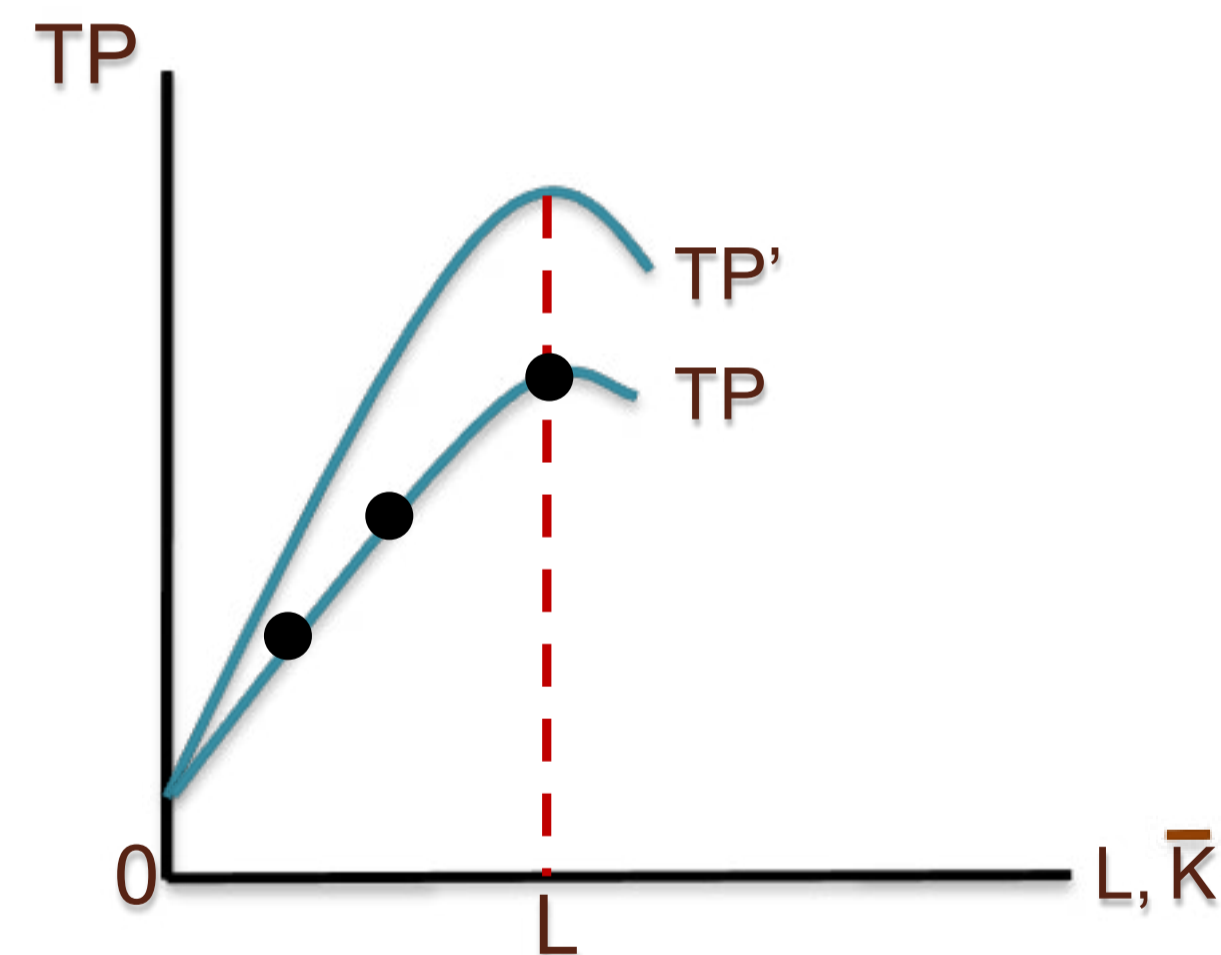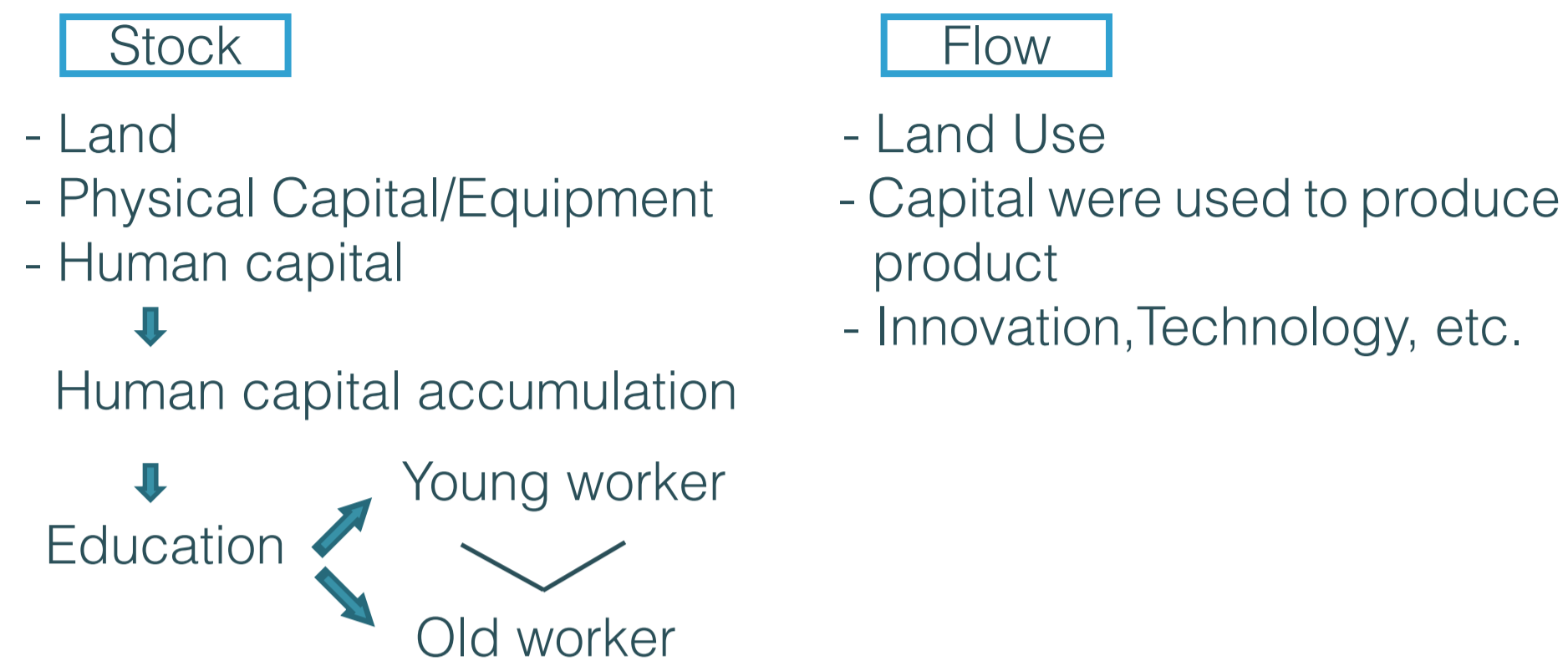

Figure 8.1

Figure 8.1 shows law of diminishing return in any production. TP shift to TP' due to higher quality of labor with respect to K constant.

2) Stock and Flow of Human Capital

Stock	Flow
- Land	- Land Use
- Physical Capital/Equipment	- Capital were used to produce product
- Human capital	- Innovation, Technology, etc.

Human capital accumulation

⬇

Education ⬌ Young worker

Old worker

Young workers have accumulation their education more than their parents. So, young worker can participate in labor market longer than parents.

## 3) Economic Development and Production Function

$$Y = f(K, L, R)$$

Physical Capital   Labor   Residual (other factors)
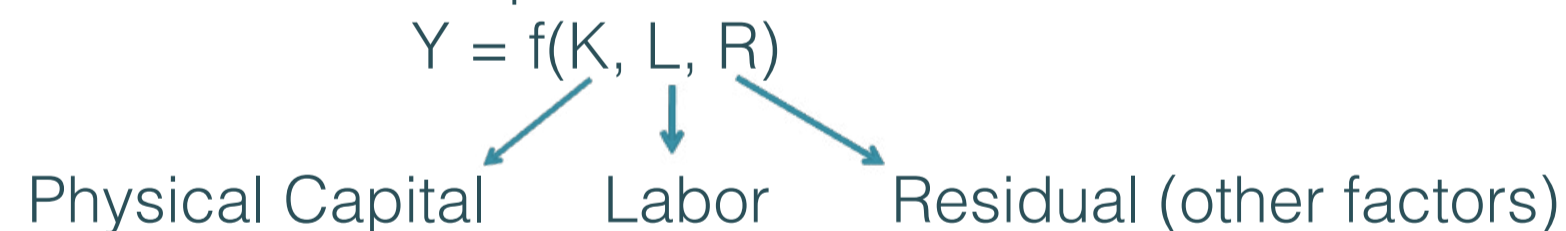
Later, Solow (1962) address that technology is one of significant to production then,

$$Y = f(K, L, t)$$

"t" is time period that utilize capital. Technology change lead to affect period of time. Solow concluded that if technology doesn't change, then quality of product would be constant. Therefore, labor should have new capacity and competed to enhance of products.

Later, Schultz (1969) stated that

$$Y = f(K, L, rKe)$$

Physical Capital   Labor   Education Investment   Return on Education
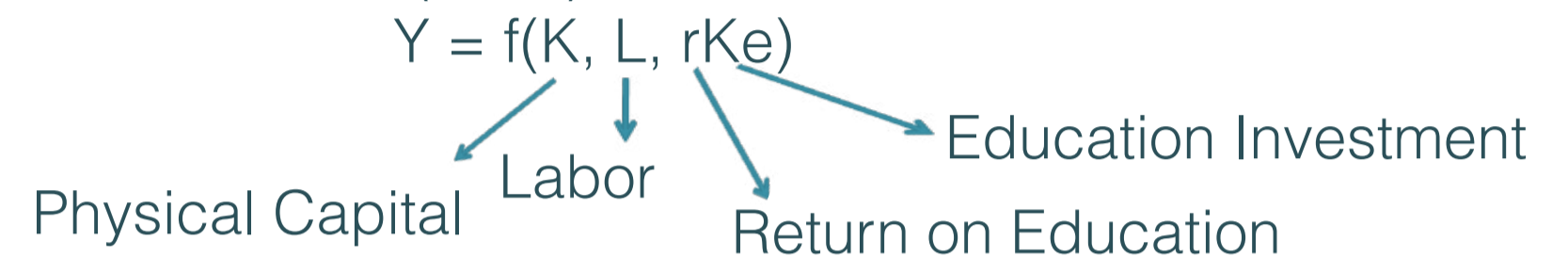
As a result, 20-40% of increasing in total product are come from education investment. Because of higher in education leads to enhance effectiveness of labor.

Moreover, Denison (1962) add new concept of high and low wage in the production function.

$$Y = f\left[K, L, \frac{W_n \cdot L_n}{W_0 \cdot L}\right]$$

where, W_n : high wage rate
L_n : number of labor at high wage rate
W_0 : general of labor at general wage
L : number of labor at general wage

$\dfrac{W_n \cdot L_n}{W_0 \cdot L}$ is productivity index

As a result, 23% of (GDP) growth rate come from education investment.

Moreover, Solowsky (1967) also studied growth of GDP show by

$Y = f(K, L, Q)$

⬇

Quality of labor

$$\dfrac{dY}{dt} = \dfrac{dK}{dt} \cdot fK + \dfrac{dL}{dt} \cdot fL$$

⬇ ⬇

MP_K MP_L

Other researcher : Bowles (1967), Griliches (1964), Psacharopolous (1970).

8.7 Problems in Manpower in Thailand

Before Participate in Labor Market	After Participate in Labor Market
-Family — Quality (number of children) / Quality	- Employer VS Employee mismatch - Unemployment in urban - Unbalanced of Migration - Shortage in some specific type of occ. - Shortage in rural area (due to migrate to urban) - Low Productivity
- School — Quality (number of supply) / Quality (Dropout from school)	public private sector

8.8 Manpower Strategy

Before Participate in Labor Market

- Family Planning
  ◉ Education in family leader and member
  ◉ Develop education system to standard level

After   Participate in Labor Market

◉ Create new job to reduce unemployment in urban

◉ Long run planning of supply of labor in next 10 years. Projection to create new staff to substitute retirement worker.

◉ Create and develop rural economic (OTOP)

◉ Training (OJT) see chapter 5