Chapter-31 Varian Exchange

for general equilibrium we are considering effect of all n number of goods, so we now consider only two goods case like we want to know the equilibrium quantity for all goods simultaneous as well as price,

But n-goods not possible for learning purpose so we are doing these things for only two goods case [as P.M.I]

True for 2 good case ⇒ also true for n good case [determining equilibrium in all markets simultaneously]

Till now, we were considering market for a good in in isolation that is we were determing rice and quantity at equilibrium and we kept the effect of other markets constant.

, partial equilibrium analysis, equilibrium condition i only one market are analysized that is how demand and supply were affected by the price of particular goods were examined.

, general equilibrium analysis we examine how dema nd supply conditions interact in several markets to determine price of many goods.

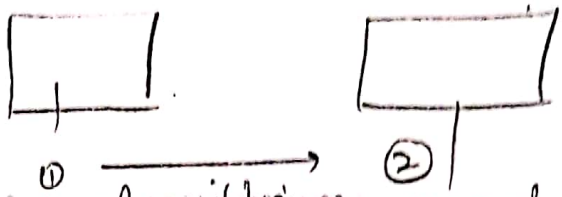
Assumptions

) Behaviour of competitive market structure is discussed i.e consumers and producers are price taker.

, we restrict ourself to analyse only to two goods and two consumers.

, General equilibrium in exchange is determined and then production behaviour in GE model (General Equili s examined.

; discuss general equilibrium in exchange we onsider an economy with two consumers having fixed endowments of each of two goods and examine how they trade these goods, This is also known as case of pure exchange



① general equilibrium in exchange (consumer)
* Two goods and two consumers

② general equilibrium in exchange (Producers)
* Two inputs and two producers. Snyder Nicholson

EDGE WORTH BOX

alphabetical order (A) (B) (I) (II)

(x_A^1, x_B^1) — good
— Individuals

Subscript - Individuals A, B
Superscript - goods (commodity) good ①, good ②

(w_A^1, w_B^1) Do not make sense

consumption bundle.
endowment set

A (x_A^1, x_A^2)
B (x_B^1, x_B^2)

endow (w_A^1, w_A^2)

x_A^1 = demand of good 1 by consumer A.

Steps for plotting edge worth Box

Step 1)

For two consumer and two goods case, plot box
graph a rectangle / sq. matrix

Step 2)

Label lower left corner as origin for individual A

.tep3)

abel right upward corner as origin for individual "B"

tep4)

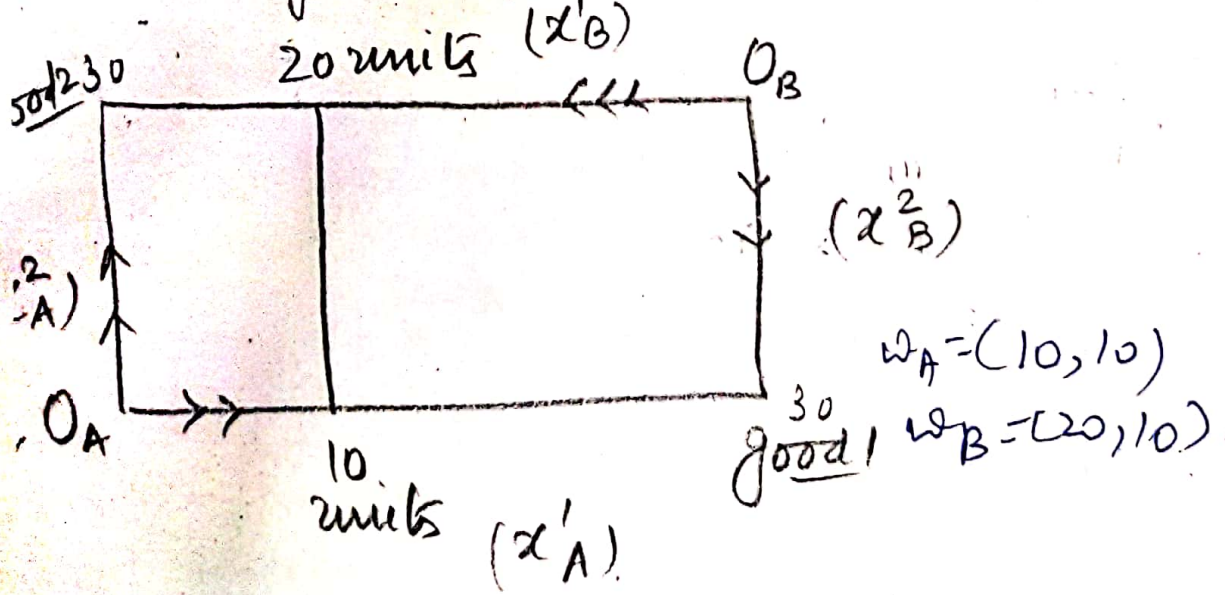
Dimensions of rectange / Edge worth Box

-) The horizontal segment measures the total units of good I that individual A and B have that is (i.e) Both horizontal lower one and upper one measures in units of good I

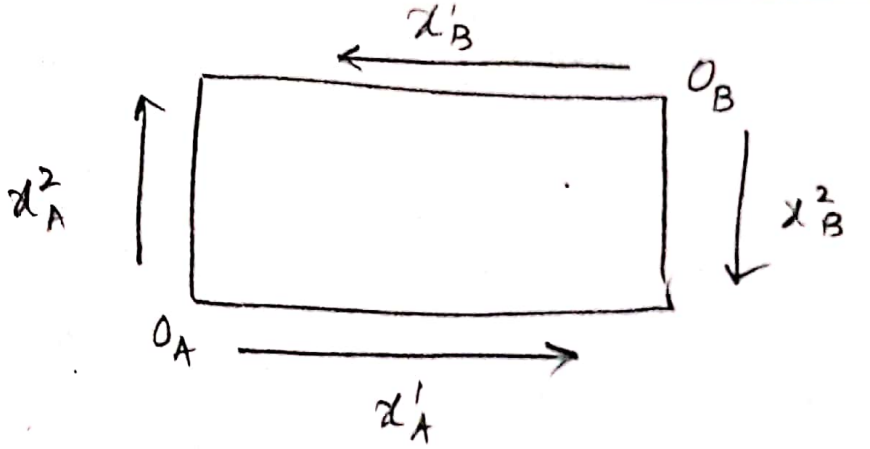
) Units of good I are measured from left o right along lower segment for individual A

) Units of good I are measured from right to left along upper horizontal segment for individual B

) units of good 2 are measured along left side ertical segment from ~~down~~ to ~~down~~ for individual "A"



) units of goods 2 are measured along right hand side vertical segment from up to down for individual



Discuss eqs. for construction Box contruction only.

$w^2_A + w^2_B$

Total length of vertical segment = $x^2_A + x^2_B$

Total length of horizontal segment = $x'_A + x'_B$

we can say Rectangle or Box ~~Square~~ $w'_A + w'_B$

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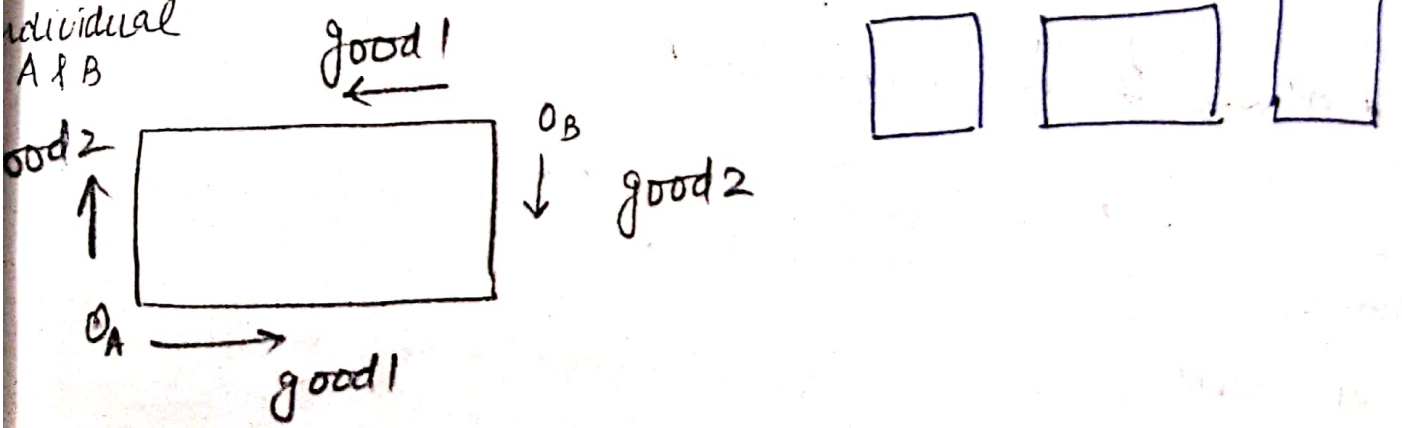
Edge worth Box

for simplicity assuming 2x2 economy

2 x 2 → goods
↓ 1 & 2
individual
A & B



$X_A = (x'_A, x^2_A)$

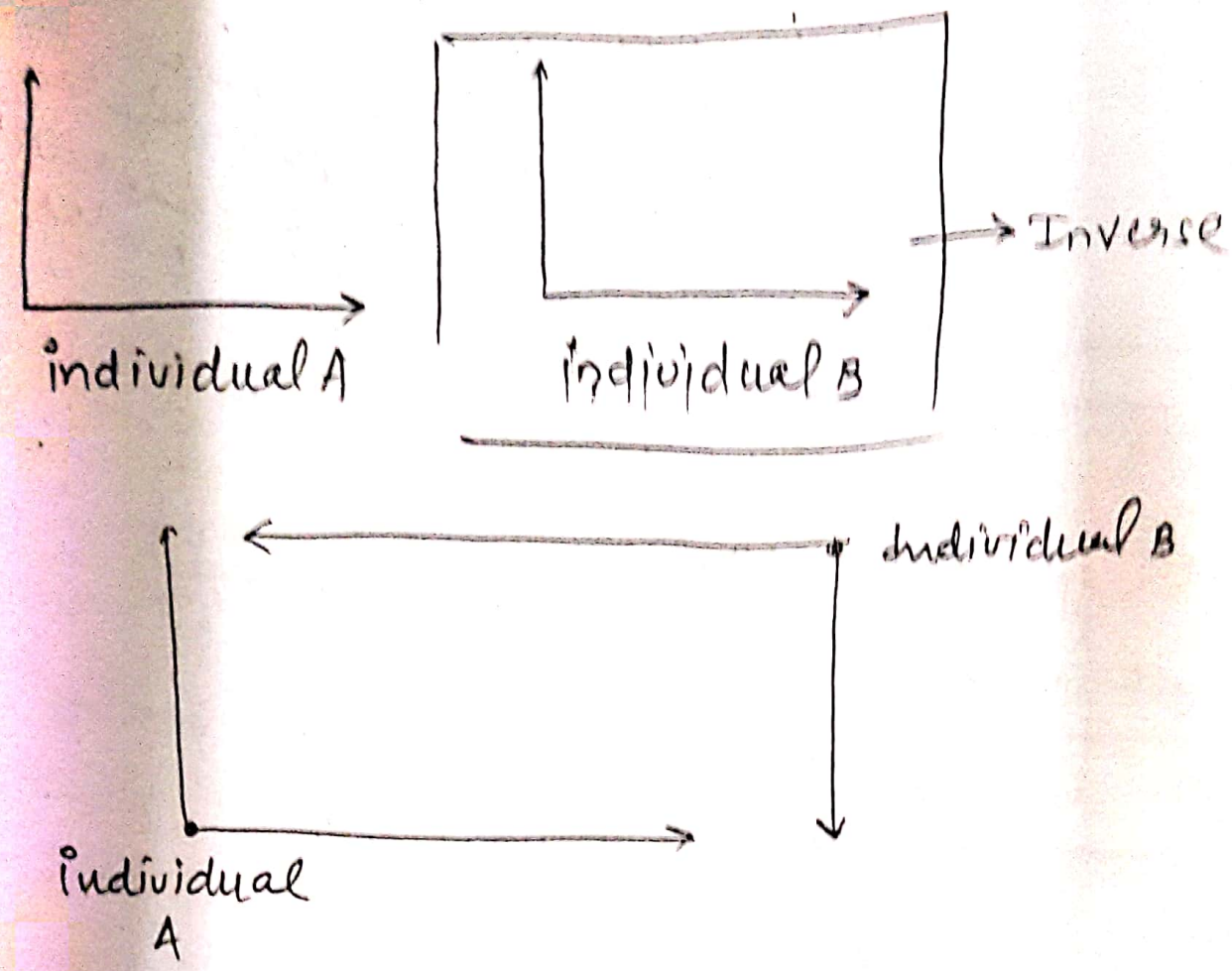
$X_B = (x'_B, x^2_B)$

endowment Bundles [initial endowment]

$w_A = (w'_A, w^2_A)$

$w_B = (w'_B, w^2_B)$

also possible that $w_B = (10, 0)$ zero (none of good 2 with individual "B".



Horizontal axes – $(\omega_A^1 + \omega_B^1)$

Vertical axes – $(\omega_A^2 + \omega_B^2)$

The graphical tool known as edge worth Box analysis the exchange of two goods between two individuals it allows us to depict endowments and preferences of two individuals in one convenient diagramme also various outcomes of trading process are analysied.

Notations

1. initial endowment

$\omega_A = (\omega_A^1, \omega_A^2)$

$\omega_B = (\omega_B^1, \omega_B^2)$

initial endowment

↓

feasible allocation

↓

final allocation

(ii) feasible allocation

allocation X_A and X_B are said to be feasible if

$\Rightarrow x_A^1 + x_B^1 = \omega_A^1 + \omega_B^1$.

Total demand of good 1 by A and B

Total supply of good 1 by A and B (endowment

$\Rightarrow x_A^2 + x_B^2 = \omega_A^2 + \omega_B^2$

Total demand of good 2 by A and B

Total supply of good 2 by A and B (endowment

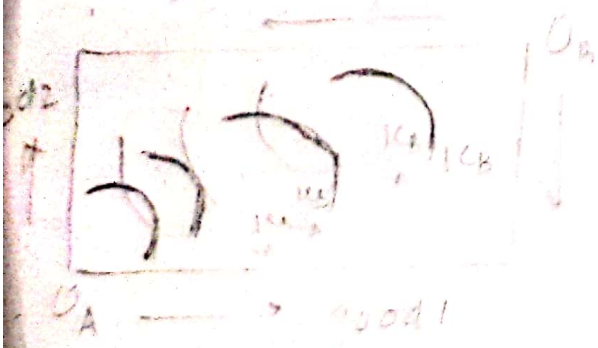
All these infinite Bundles are known as feasible allocation (also in decimals)

(iii) final allocation

Each consumer takes his endowment Bundle to the market for exchange and in the course of trade that is (i.e) after exchanging some of these goods the Bundle they end up with is final allocation. is determined by their respective prefs

Indifference curve and preferences:-

assuming both A and B have convex preferences (well behaved indifference curve)



they can be
→ Crossing
→ Intersecting
→ tangent (at infinite points)

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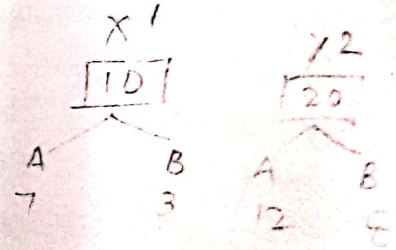
example

if total endowment of good1 is 10 and total endowment of good2 is 20, and $X_A = (7,12)$ then find $X_B = ?$

$$X_B = (10-7, 20-12)$$

$$X_B = (3,8)$$



note)

All points in edge worth Box gives us Bundles that A & B can hold that is points in edge worth Box can represent all feasible allocations

(all interior + all points on edge)

Note

all interior point has to span with 2 IC's hence all points has associated with 2 IC's

We on 2 IC's

example EB & IC

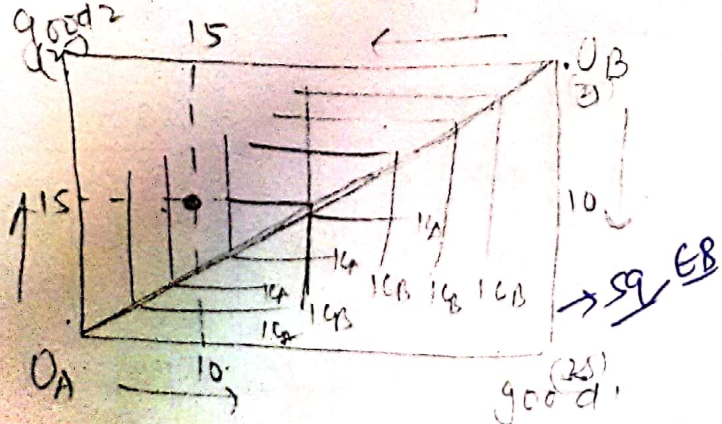
$(\omega_A^1, \omega_A^2) = (10, 15)$

$(\omega_B^1, \omega_B^2) = (15, 10)$ $\frac{}{25}$ $\frac{}{25}$ ⇒ SQ

$U_A(x^1, x^2) = \min(x^1, x^2)$ — Perfect complement

$U_B(x^1, x^2) = \max(x^1, x^2)$ —

1:1 relationship hence pair with U° one



edge worth Box is square because

$(\omega_A^1 + \omega_A^2 = 25)$

$(\omega_B^1 + \omega_B^2 = 25)$

note)

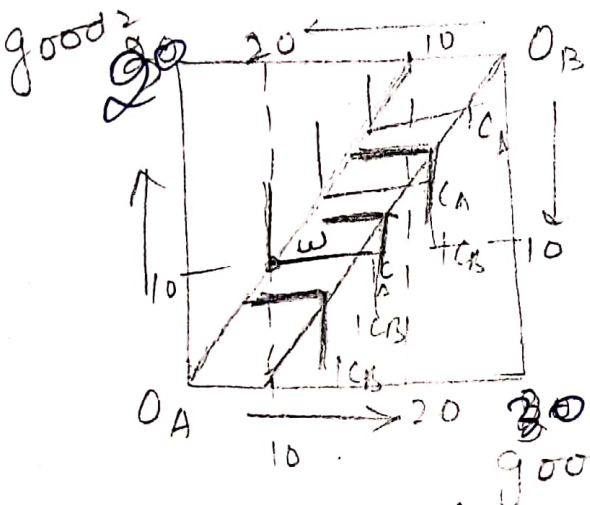
A's preferences are independent from B's preferences.

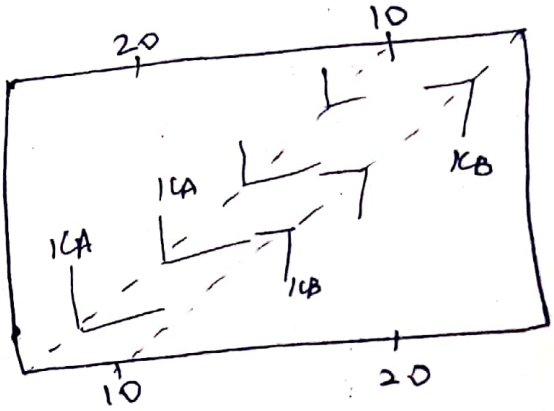
Example

$(w_A^1, w_A^2) = (10, 10)$

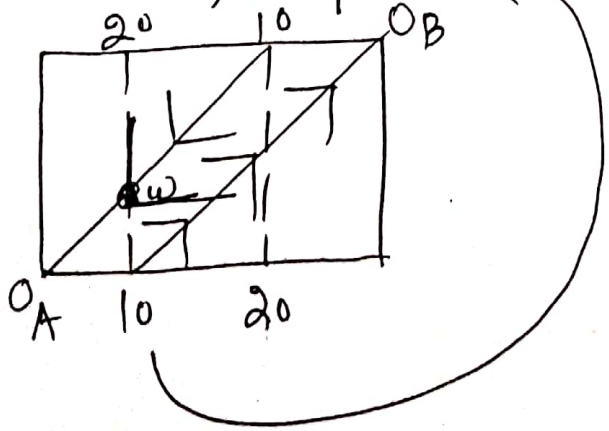
$(w_B^1, w_B^2) = (20, 10)$

$U_A(x_A^1, x_A^2) = U_B(x_B^1, x_B^2) = \min(x^1, x^2)$





Rectangle → formation of square because of 1:1 relationship of



in endowment there is 1:1 relationship 10,10 and in PC perference there is also 1:1 relationship.

$U_A = \min(x_1, 2x_2)$

$U_B = \min(x_1, x_2)$

Example

$(w'_A, w_A^2) = (10, 10)$

$(w'_B, w_B^2) = (20, 10)$

$U_A = \max(x_1, x^2)$

$U_B = x_1 x_2 \cdots x^1 x^2$