

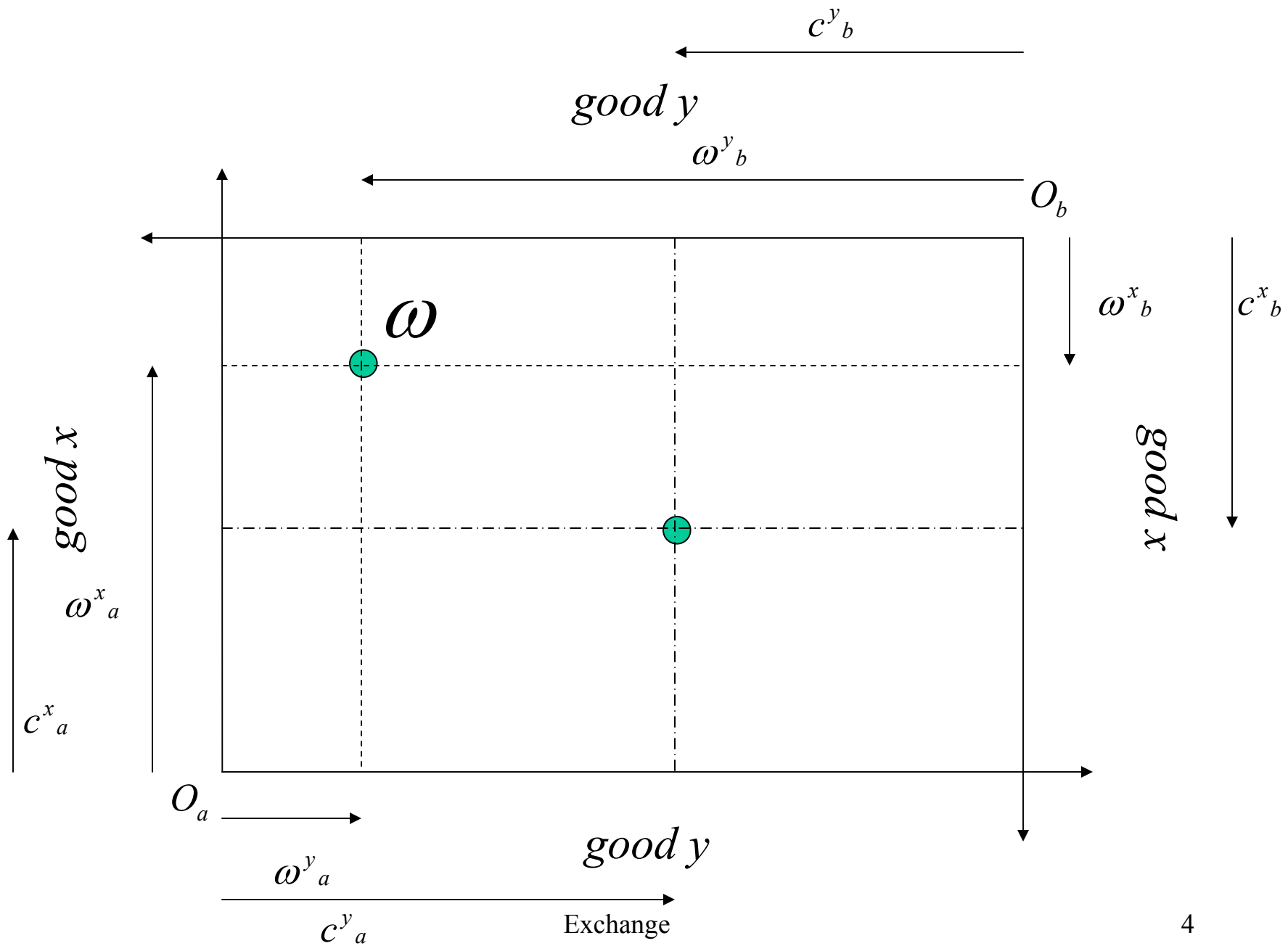
Exchange

Exchange (based on Varian's Ch. 30)

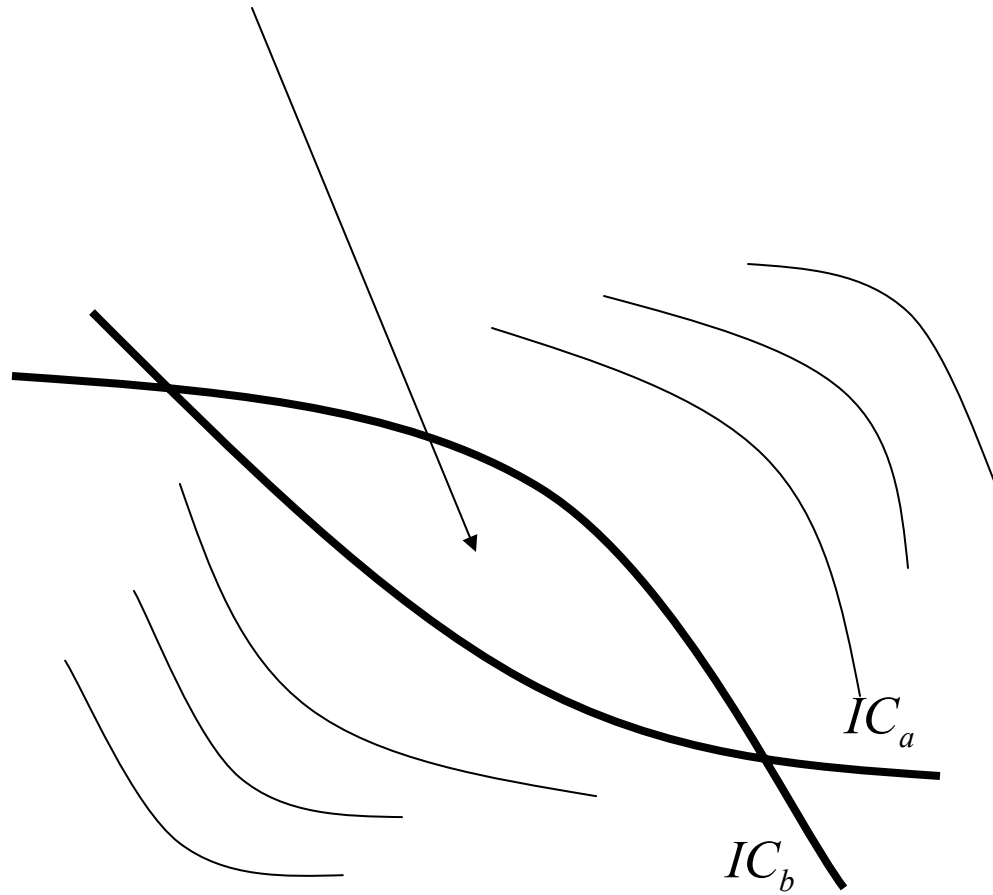
- Look at:
 - Pure exchange equilibrium (Edgeworth box)
 - Pareto efficient allocations
 - Market trade
 - Equilibrium and efficiency
 - First welfare theorem
 - Second welfare theorem
 - Implications of welfare theorems
 - The Robinson Crusoe economy
 - Pareto efficiency in the presence of production and exchange

Pure exchange equilibrium: the Edgeworth box

- Exchange permits each individual to get more of goods she likes better.
- In other words, trade is mutually **advantageous!**
- Better seen in Edgeworth box: ingredients:
 - **Indifference curves** (yet again).
 - **Endowment** (yet again).
 - **Budget constraint** (yet again).



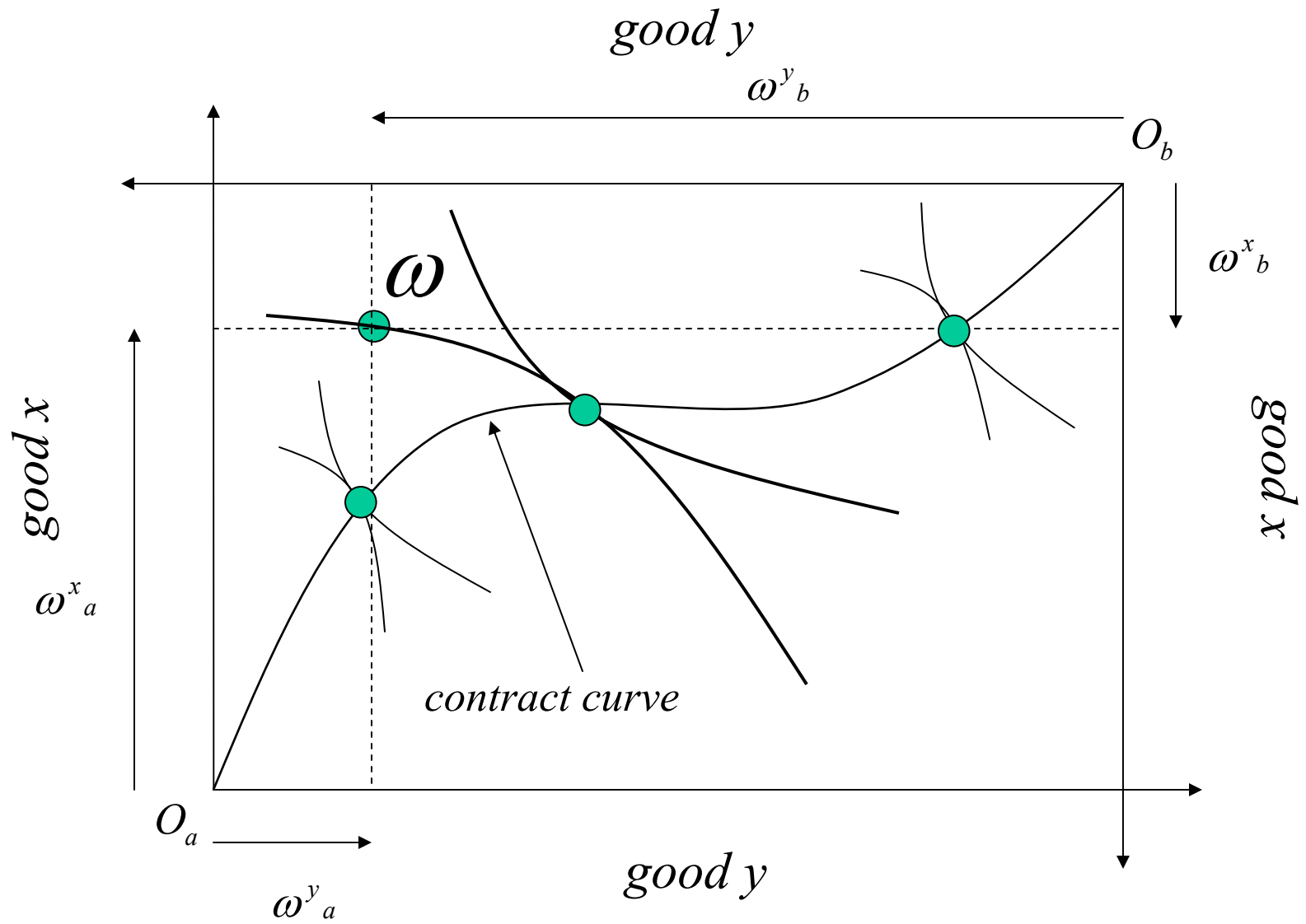
region of mutual advantage



Exchange

Trade

- Start with endowment and then find Pareto efficient allocations.
- The ‘set’ of all Pareto efficient allocations makes up the **contract curve**.



Exchange

Pareto efficient allocation

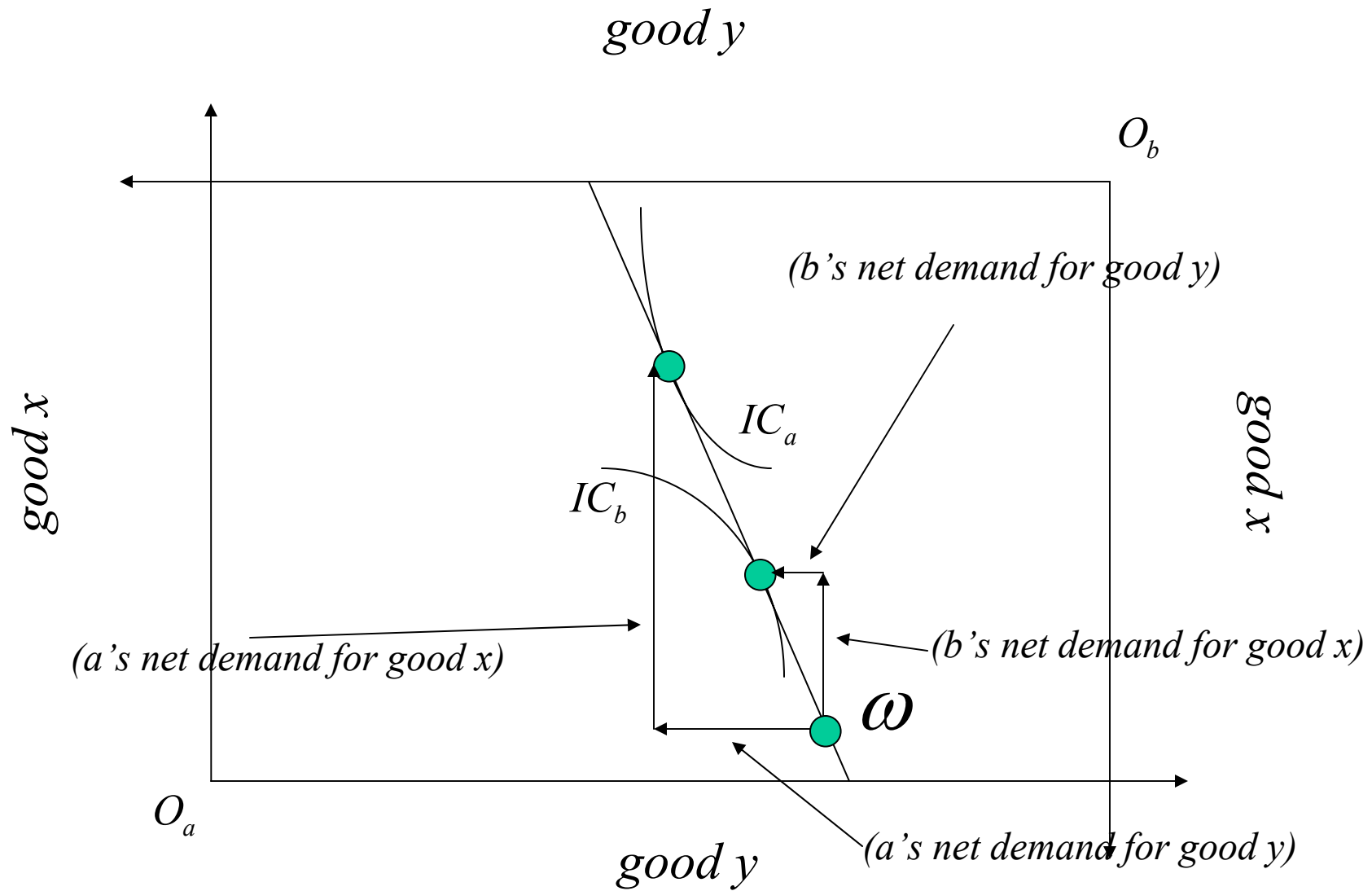
1. There is no way to make all the people involved better off.
2. There is no way to make some individuals better off without making someone else worse off; or
3. All of the gains from trade have been exhausted; or;
4. There are no mutually advantageous trades to be made.

Market trade

- So far a lot of ambiguity
 - Only thing we say is that consumers will move to a Pareto efficient allocation
 - But need to specify the ‘particular’ trading process with which this can be achieved

A 'reasonable' trading process

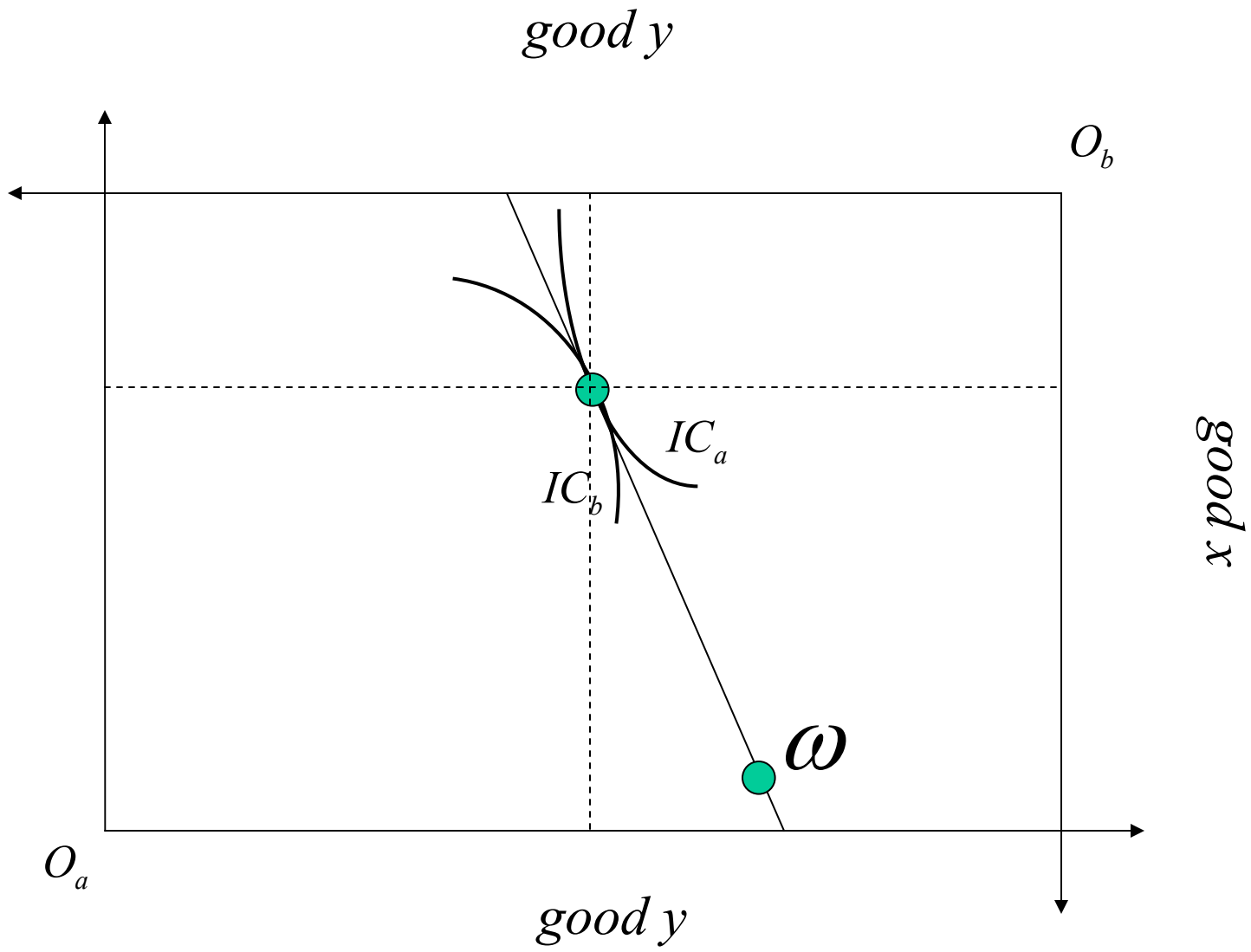
- Consider two agents called a and b and 2 goods x and y .
- Invent fictitious 'auctioneer'.
- The 'auctioneer' chooses prices for good x and good y and presents them to agents.
- Agents has endowment of goods.
- Agents calculate how much their endowment is valued and decide how much the want to buy from the goods.



- In previous graph market was in disequilibrium (demand not equal supply)
- Auctioneer keeps calling out prices until market is in equilibrium (**competitive equilibrium or Walrasian equilibrium**)

Equilibrium and efficiency

- An important result is that, after we have traded to the competitive equilibrium, agents will want to trade no more.
- That is, the competitive market is Pareto efficient!
- This is the **first welfare theorem!**
- **Important:** This theorem simply says tell me the prices and an equilibrium exists. It needs no additional information (how much other people consume, who they are....)

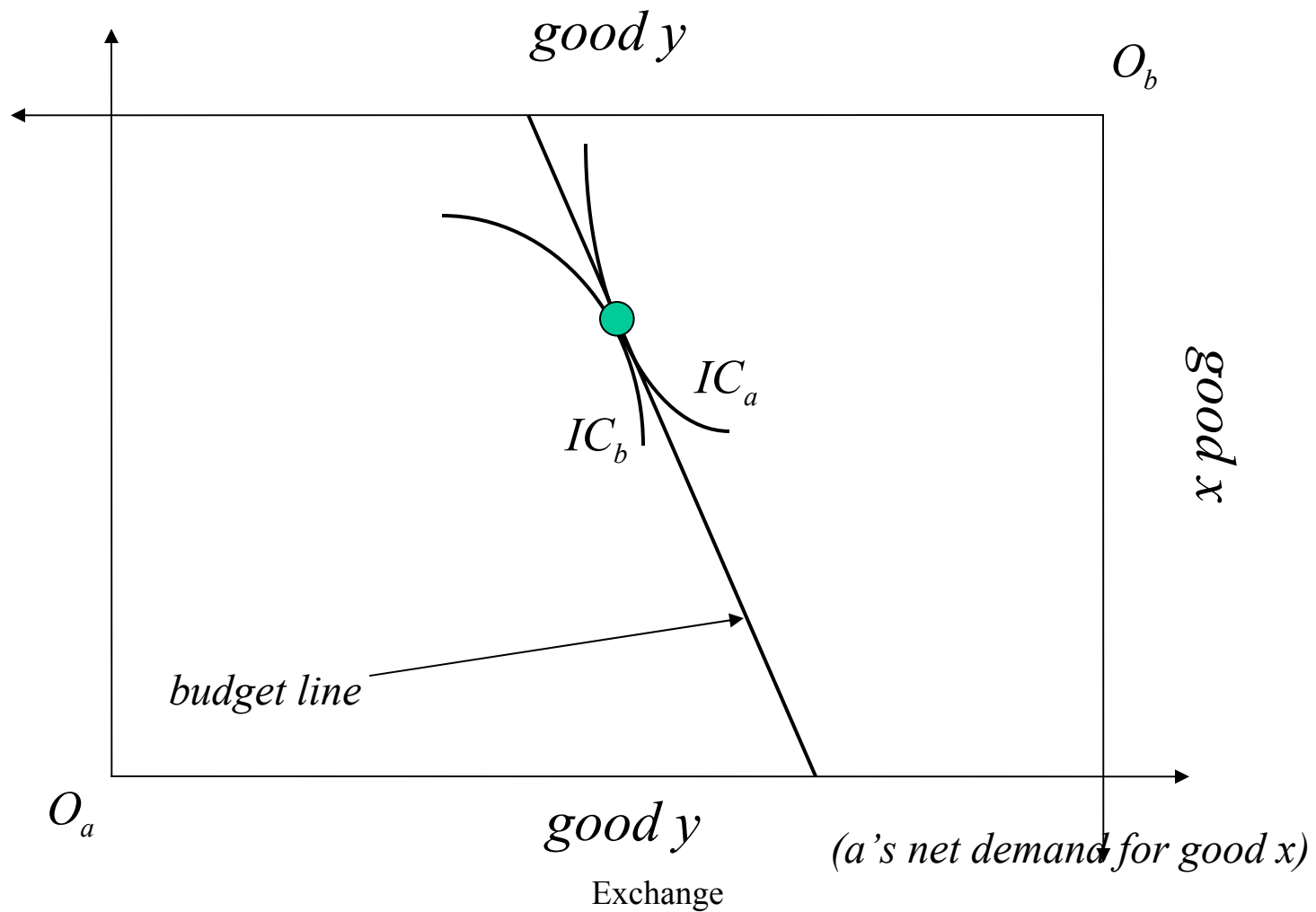


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Second welfare theorem

- Given a Pareto efficient allocation we can, under certain conditions, find prices such that there is a **market equilibrium!**

Second welfare theorem in graph



Implications of the FWT

- Profound implications for the design of ways to allocate resources efficiently.
- Major assumption is that private interests only matter (so FWT excludes externalities).
- In the presence of externalities a competitive equilibrium need not be Pareto efficient.
- The importance of FWT is that it gives a **general mechanism** (the competitive market) that can be used to ensure Pareto efficient outcomes, and this is important if millions of people trade!

Implications of the SWT

- SWT asserts that, under certain conditions, every Pareto efficient allocation can be achieved as a competitive equilibrium.
- This implies that *efficiency* can be separated from *equity*.
'What ever Pareto efficient allocation you want...you can achieve it'!
- So prices play a dual role: *allocative* and *distributive*.
- Allocative indicates *scarcity* of resources.
- Distributive indicates how much different goods different agents *need*.

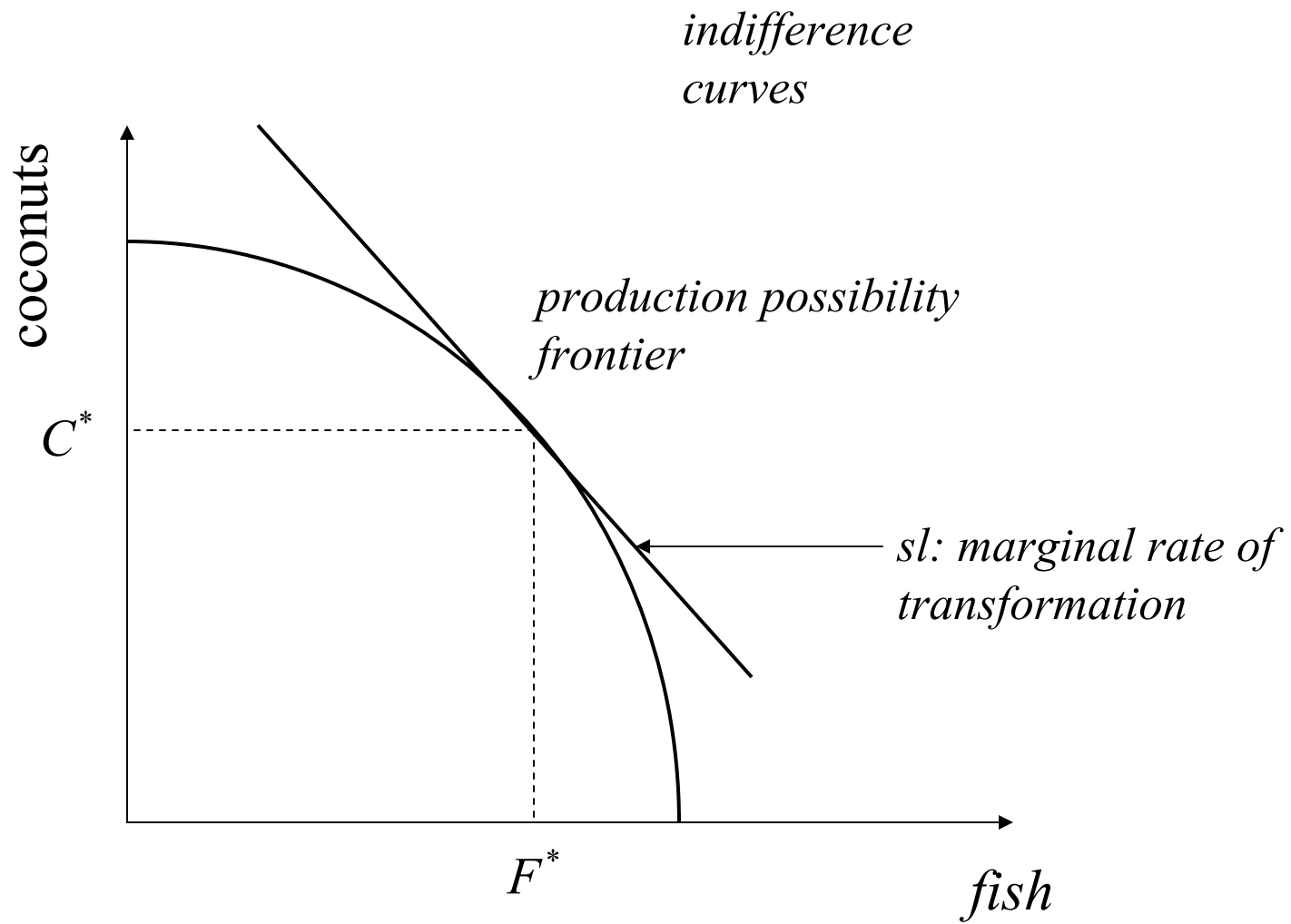
- **Again, to put it simply:** pick *any* Pareto efficient allocation (which may depend on your value judgement) and use prices to achieve it (as a competitive equilibrium).

Production and conditions for Pareto efficiency

- So far agents participated in a pure exchange economy.
- Now we briefly study how production alters things.
- Consider two agents, called Robinson and Friday, and 2 goods fish and coconuts.
- Called this a Robinson Crusoe Economy.

Robinson Crusoe economy

- They have a dual role on the island: they are producers and consumers.
- They have 2 choices: can produce fish or gather coconuts (for given amount of labour).



Exchange

Pareto efficiency

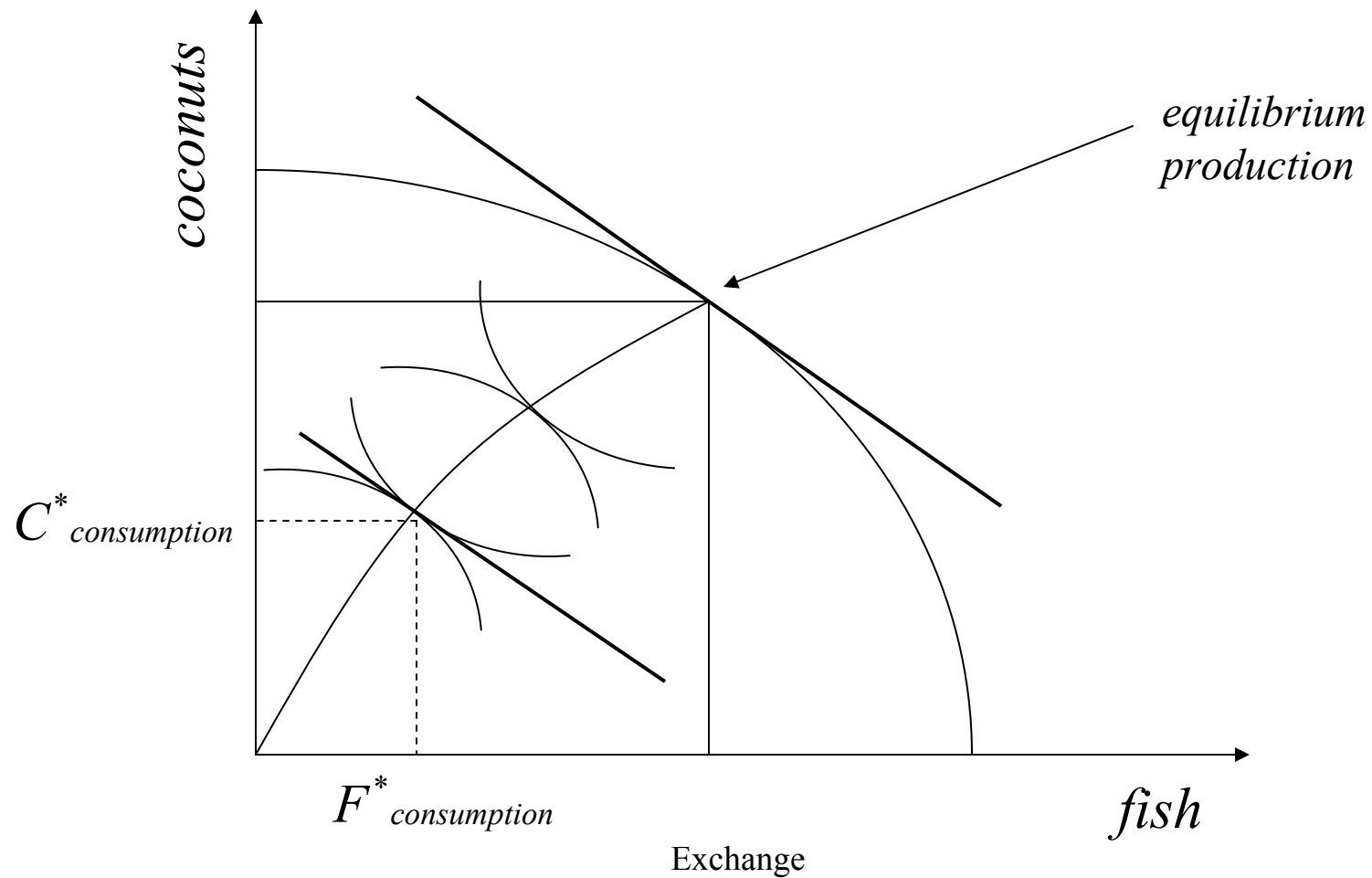
- In this economy Pareto efficiency requires

$$MRS^C_{FishC} = MRS^F_{FishC}$$

$$MRT_{FishC} = MRS_{FishC}$$

- The first gives exchange efficiency
- The second gives production efficiency

Production and the Edgeworth box (with exchange)



Example

- Suppose $MRS^C_{FishC} = 1 = MRS^F_{FishC}$
- Suppose that $MRT_{FishC} = 2$
 - i.e economy can produce 1 fish for 2 coconuts
 - Whereas consumers are happy to exchange 1 fish for 1 coconut.
- Then give up 1 fish and produce 2 more coconuts so end up with 2 coconuts instead of 1 (for 1 fish).
- No reallocation that leads to Pareto efficient outcome is possible if conditions above are satisfied.