MICROECONOMICS
Principles and Analysis

CONSUMER: AGGREGATION

USE OF CONSUMER MODELS IS OFTEN SIMPLIFIED...

- (1) We usually suppose that a many-dimensioned commodity space can be represented appropriately in terms of just a few commodities.
  - Requires *aggregation over goods*
- (2) We often assume that there is a "representative consumer."
  - Requires *aggregation over consumers*
- We can use economic analysis to see whether and when these two simplifications are appropriate

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AGGREGATION OVER GOODS: THE ISSUE

- Why n goods?
- What determines the boundaries between goods?
- Diagrams all with 2 goods.
  - Is this valid?
  - What assumptions are we making?
- Is it legitimate to simplify the n-commodity problem to, say, a 2-commodity problem?

AGGREGATION OVER GOODS: THE MODEL

- Use the standard preference model with n goods.
- Find an aggregate $\bar{x}$ and a function $\bar{U}(x_1, \bar{x})$ that yield the same behaviour as $U(x_1, x_2, x_3,..., x_n)$
- Then we can say that $\bar{U}(\bullet, \bullet)$ also exactly represents the consumer's preferences.
- The aggregation problem is then solved.

AGGREGATION OVER GOODS: RESULT

- The "composite commodity" theorem:
- You can always aggregate over goods $2,3,..,n$ if relative prices of goods $2,3,..,n$ stay constant.
  - $U(\bullet, \bullet, ..., \bullet)$ and $\bar{U}(\bullet, \bullet)$ then represent the same preferences
- Clearly this can be done for any arbitrary group of commodities.
 - You just need the condition on relative prices

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AGGREGATION OVER CONSUMERS

- We need to model the behaviour of n_h consumers.
- Consumer h has utility function U^h and income y^h.
- From this get demand for good i in usual way, given prices **p**.
  - $D^{hi}(\mathbf{p}, y^h)$.
- If all goods are "private" we can easily get total demand for i.
  - Just add up over the D^{hi}
- Let's look at the simple mechanics.

1

AGGREGATION OF CONSUMER DEMAND

- *Alf's demand curve for good 1.*
- *Bill's demand curve for good 1.*
- *Pick any price*
- *Sum of consumers' demand*
- *Repeat to get the market demand curve*
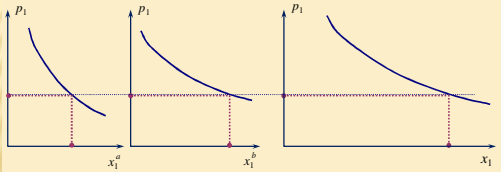
AGGREGATION OVER CONSUMERS: THE ISSUES

- ✕ Demand for good i by each consumer h depends on prices $\mathbf{p}$ and income y^h.
- ✕ Aggregation problems could arise as with firms.
- ✕ But main issue is: will the mass of consumers behave in the same way as a single consumer?
- ✕ In general market demand will depend on the *distribution* of incomes y^h.
- ✕ Can we write average demand as $\bar{D}^i(\mathbf{p}, \bar{y})$, say?
  - + For example $\bar{y}$ could be average income in the market.
  - + Just take the mean over the consumers
- ✕ We can do this only in special cases...

AGGREGABLE DEMAND FUNCTIONS
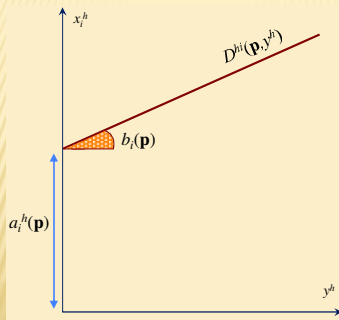
- *Plot demand against income.*
- *h's demand for good i.*
- *"subsistence minimum" demand*
- *Relation of demand to income*

- *Must be linear in income.*
- *Intercept could differ amongst the h.*
- *Slope must be the same for all h.*

AGGREGABILITY

- ✕ Aggregable demands require restrictions on income effects.
  - + In our case average demand depends on average income.
  - + Must have demand that is linear in income, with the same slope for all.
- ✕ Implies restrictions on preferences
- ✕ But what could happen if this condition were not satisfied?
- ✕ Let's consider an example...

A CONSUMER (ALF)
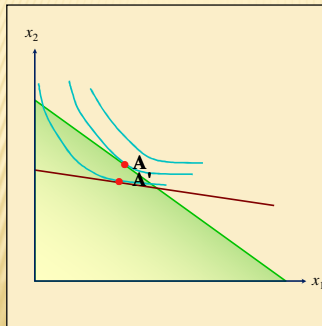
- *Preferences look like this.*
- *Initial prices determine budget constraint.*
- *Prices then change thus.*
- *Equilibrium moves from A to A'*

ANOTHER CONSUMER (BILL)
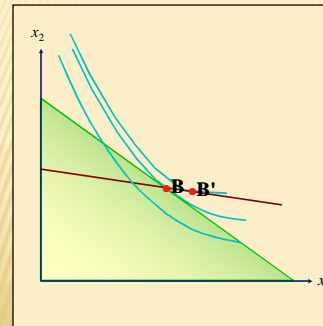
- *Different preferences, (and resources) but....*
- *Faces the same initial prices.*
- *Prices then change the same way as for Alf*
- *Equilibrium moves from B to B'*

ALF AND BILL COMBINED

x_2

A&B

A'&B'

x_1
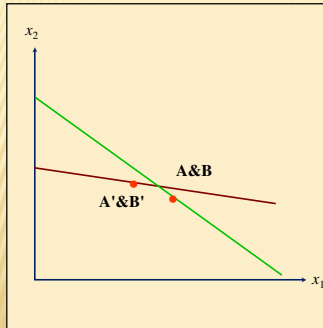
- *Initial equilibrium*
- *New equilibrium.*
- *In the aggregate WARP does not hold (!)*

- *Each consumer's behaviour is conventional.*
- *Each individual satisfies WARP.*
- *But the joint behaviour does not satisfy WARP.*
- *This is because Alf and Bill are "too dissimilar" in their preferences.*

13

WHAT NEXT?

- Integrate production and consumption decisions.
- Examine behaviour in general equilibrium

14

3