CONSUMER BEHAVIOR – PART 1

OBJECTS OF CONSUMER CHOICE

"Basket" or "bundle" or list of quantities of goods and services consumed
can include labor supplied (flip side of leisure consumed)
Represented by points in plane or space with Cartesian coordinates

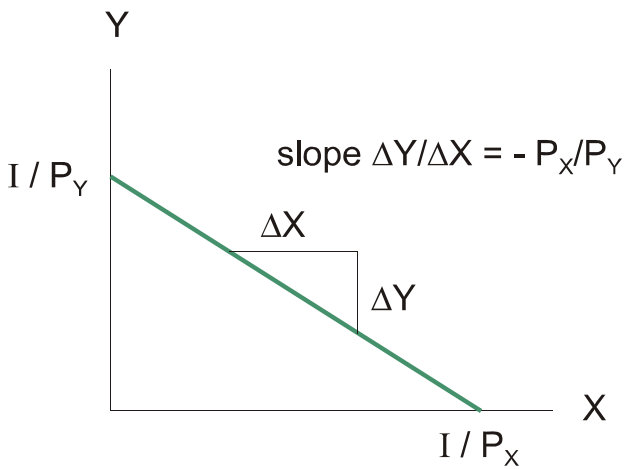
CONSTRAINTS ON CHOICE

A. Physical and technological constraints

Quantities generally must be non-negative
Minimum positive amounts of some goods needed for survival
Interactions, e.g. Food $\geq$ constant * Hours of work
Upper bound on one's own time (leisure etc.)
Most of the time, we will only consider non-negativity

Some goods come in discrete quantities, e.g houses, autos
But even these have continuous dimensions, e.g. area, horsepower
We will generally consider quantities to be continuous variables
Occasionally need to recognize discreteness

B. Budget constraint (P–R pp. 79-81)



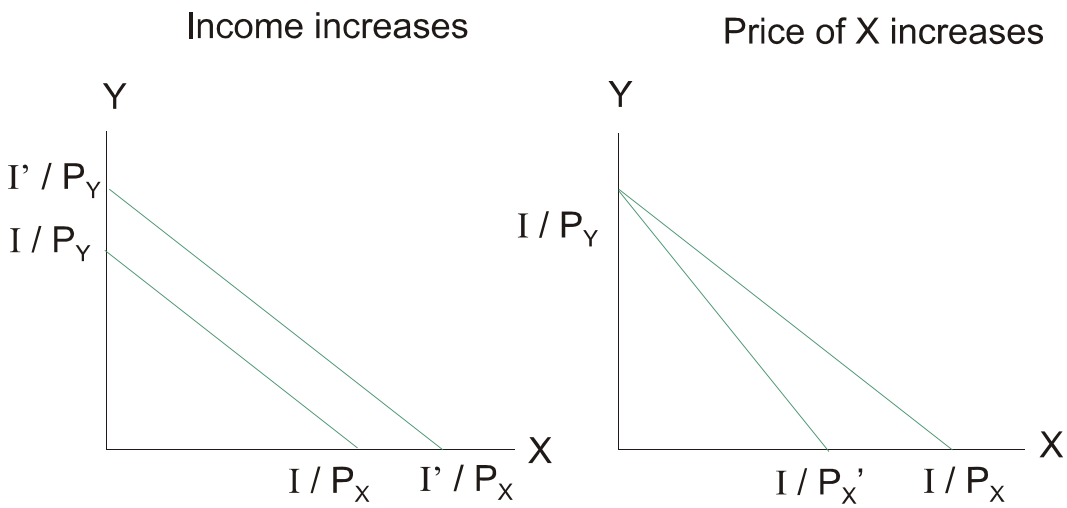
Usual line : $P_X X + P_Y Y = I$
Moving along line, $P_X \Delta X + P_Y \Delta Y = 0$
So slope $\Delta Y/\Delta X = - P_X / P_Y$

Or solve for Y in terms of X: $Y = (I / P_Y) - (P_X / P_Y) X$
Derivative = $dY/dX = - P_X / P_Y$
Economically, this is the
"price of X relative to Y" or "measured in units of Y":
How much Y you have to give up to get 1 more of X
(Opportunity cost of consuming more X)

Intercepts: (I / P_Y) on Y-axis, (I / P_X) on X-axis
Economically, how much of each good could you buy if you bought nothing of the other

Useful special case : X is a particular good that is focus of analysis,
and Y is an aggregate of all other goods, measured by $ spent on them
Then $P_Y = 1$, and $Y = I - P_X X$

Two typical shifts of budget line: (P-R pp. 82-3)



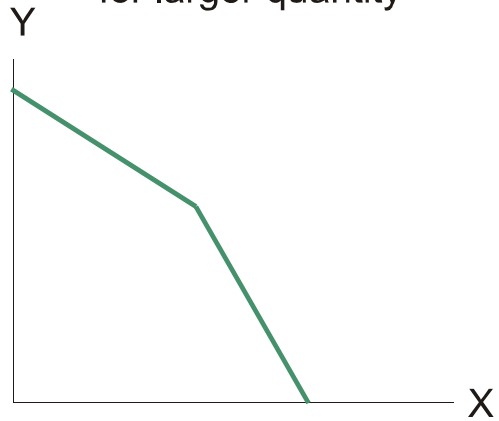
If both prices change in same proportion, e.g. (P_X , P_Y) to (3 P_X ,3 P_Y)
This is exactly as if instead income changed by opposite proportion to I /3:
budget lines $3P_X X + 3P_Y Y = I$, $P_X X + P_Y Y = I/3$ are same
Later, for price changes of different proportions, I / an index of prices will be what matters

If income and all prices changed in the same proportion, e.g.
(P_X , P_Y , I) to (3 P_X ,3 P_Y ,3 I), or to (0.71 P_X , 0.71 P_Y , 0.71 I)
Budget line does not change at all, for example
common factor 3 cancels from equation $3 P_X X + 3 P_Y Y = 3 I$

So only price ratios or relative prices
and real purchasing power of income matter for choice

Examples of budget constraints in more complex applications: (mostly not in P-R)

Price premium
for larger quantity



Price discounts OR
Choice of “price plans”

1. Lower coupon-price with
   limit per customer
2. Phone plan with fixed fee for
   a limited number of minutes
   (First portion is flat)
   (Related to P-R pp. 88-9)
3. Borrowing and lending
   with higher rate to borrow
   Here X is current consumption
   and Y is future consumption

1. Buy one, second half-price
2. Can choose one of two phone calling plans:
   One has low fixed fee, high cost per call
   Second has high fixed fee, low cost per call
3. Overtime pay at higher rate
   Here X is leisure and Y is income

We will examine choice in some of these situations later

PREFERENCES – STANDARD OR “NEOCLASSICAL” THEORY

Preferences defined over bundles or baskets of quantities of goods and services
May have preference over others’ consumption –
consumption externalities, ethical concern about distribution etc.
But begin by considering preferences over one’s own consumption bundles
Preferences are like wish-lists, ignoring prices or budgets
Those come in later, and the two aspects together determine consumer’s optimal choice

Basic assumptions about preferences of each consumer: (P-R pp. 66-7)

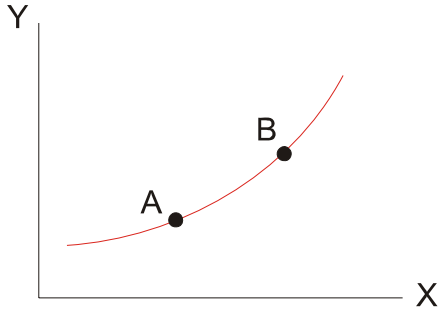
1. Completeness – Given any two bundles A and B, exactly one of the following is true
(a) the consumer prefers A to B, (b) the consumer prefers B to A,
(i) the consumer is indifferent between A and B
So indecisiveness or inconsistency not allowed
In reality, sometimes “framing effects” may cause consumer to
prefer A to B in one formulation of choice, and B to A in another formulation

2. Transitivity – If three bundles A, B, C are such that the consumer
prefers A to B and prefers B to C, then the consumer prefers A to C
This is a condition of logical consistency, ruling out cycling over choices

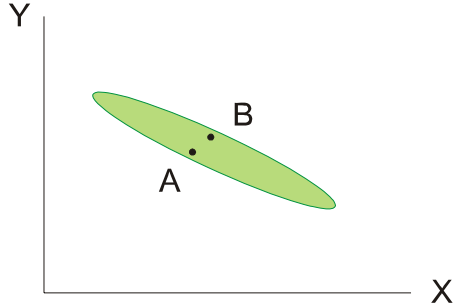
3. Non-satiation – If bundle A has more of some things than B, and no less of any,
then the consumer prefers A to B.
This is a reasonable condition in most cases, and harmless if there is “free disposal”

Next we build the concept of indifference into an indifference curve (P-R pp. 67-71)
Start with any bundle A, and show all bundles indifferent to it
Because of non-satiation, these form a downward-sloping curve:
can't be a thick set of points, and can't be crossing curves
Pictures illustrate this - can't have indifference between

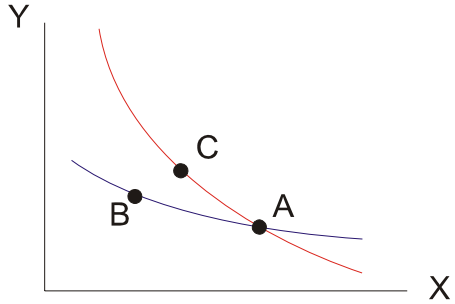
(1) A and B



(2) A and B

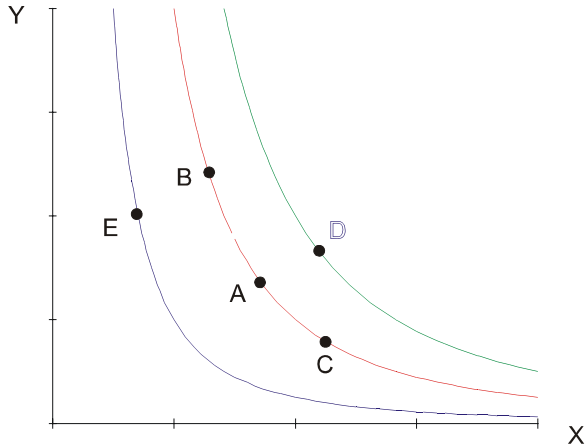


(3) B and C

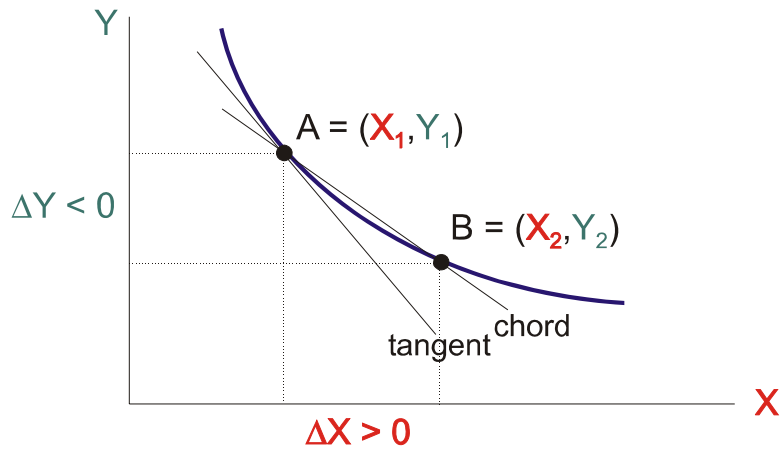


Indifference map: complete set of indifference curves

In figure on right, B, C indifferent to A
D preferred to A
B preferred to E
Therefore by transitivity,
D preferred to B, C, E
A, C preferred to E



Most important concept: marginal rate of substitution along an indifference curve (P-R pp. 71-2)
How much Y is the consumer
willing to give up in order to get 1 more of X



Arc: Slope of chord
$MRS = (- \Delta Y)/(\Delta X) = - \Delta Y / \Delta X$
Point: slope of tangent
$MRS = - dY/dX$ along indifference curve

Usually shown as positive (numerical value)

Indifference curves usually shown convex
Implicit assumption – Diminishing MRS
As X increases and Y decreases
along an indifference curve, MRS decreases
Intuition – As consumer has more X and less Y (retaining indifference)
the consumer values X **relatively** less: willing to give up less of Y to get even more X
But this may not always be true e.g. for addictive goods;
For these, indifference curves can be concave

HOW GOOD IS THIS THEORY? (mostly not in P-R)

Some objections pertain only to elementary expositions, not to the theory as a whole:

1. It is static. But can make it dynamic: tradeoffs between present and future consumption
   Then MRS gives the willingness to delay consumption, and choice yields
   demand for borrowing or supply of lending as function of price of delay: interest rates
   Dynamics can also introduce "path dependence"
   Previous consumption affects future preferences – addiction, desire for variety
   Endowment effect: once you own something, you come to value it more than what
   you were previously willing to pay, and would resell it only for a substantial premium
2. It is selfish. But can add concern about, and effects of, others' consumption:
   Concern for equity, fairness, envy; externalities, fashions, herd behavior etc.
3. Many purchases are made on whims, not rationally
   But whims may average out over some reasonable time period - empirical question
   Also whims may average out over people, yielding good theory of market demand
4. It assumes too much calculation ability. But calculations do not have to be explicit,
   can be rules of thumb based on experience. So the theory can do a good job of
   explaining regular purchases, but needs modification for totally new things.
5. It ignores uncertainty. But will extend it soon.
6. It assumes goods come in continuously variable quantities.
   But will briefly indicate how to extend it to discrete choices such as cars, houses

Other objections are potentially more serious and need rethinking and modification of theory:

1. Who is this “consumer”? Individual or household?
   If latter, how are preference differences within a household resolved?
   This is relatively new line of research.
2. It assumes that preferences are defined over the bottom line:
   actual quantities of consumption that finally occurs,
   and not by any “story” or “framing” involving comparison with something else
   In reality, people’s preferences are often affected by such considerations,
   e.g. “loss of 200 lives” versus “saving of 400 out of 600 who seemed doomed”
3. Basic premise of economics – methodological individualism
   Must start with individual’s preferences and build up to market demands etc.
   Sociology, social psychology etc. focus on the formation of individual preferences
   within the context of their social environments (“embeddedness”)
4. Economists usually assumed that people had a realistic appreciation of
   their own prospects and abilities; psychologists find overconfidence etc.

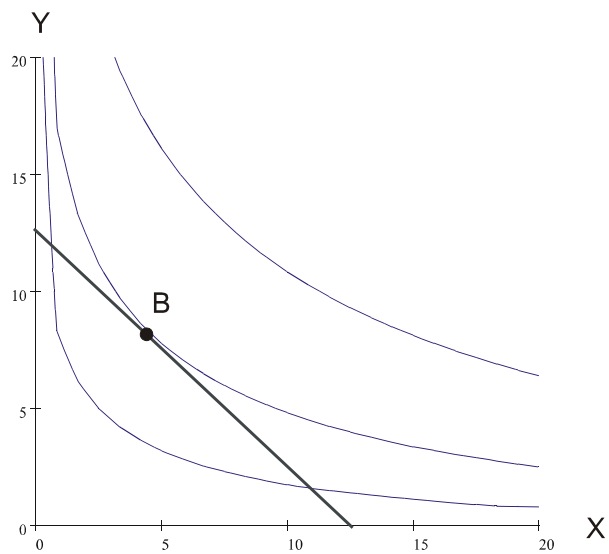
   Recent research in economics has begun to make connections with the findings
   of these other disciplines and incorporate them into microeconomic theory

Bottom line: Standard theory is good start,
but must be cautious and flexible in interpreting and using it
and improvement / modification of the theory is important line of research
Will outline some empirical evidence later

OPTIMAL CHOICE – SIMPLEST "TEXTBOOK" CASE (P-R pp. 83-7)

Tangency between budget line and an indifference curve

MRS = P_X / P_Y at the optimum point B



Along budget line to north-west of B,

MRS > P_X / P_Y , so

willingness to give up Y to get more X

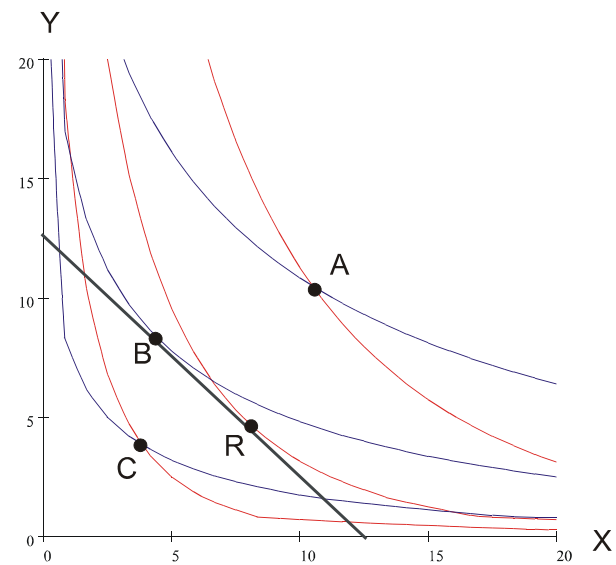
> need to give up (opportunity cost)

So buy more X, move along budget line

Conversely, from south-east of B, less X

Both calculations converge to optimal B

Comparison of two consumers with different preferences



Blue likes X relatively less than does Red:

at any common point (like A or C)

Blue has flatter IC (lower MRS) than Red

So Blue's best choice of X is lower: B vs. R

At respective optima (B and R), the two have the same MRS (each = P_X / P_Y)

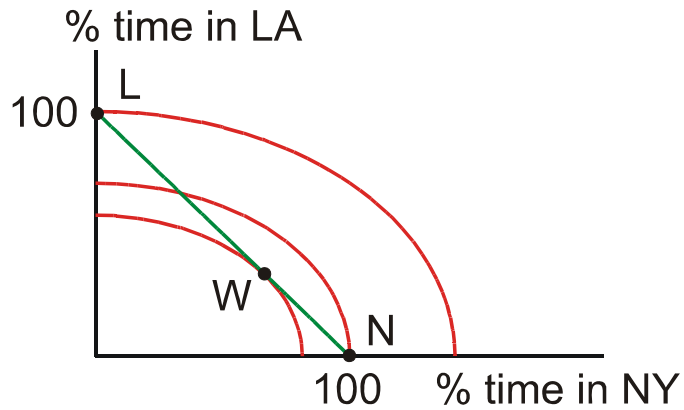
But only because Red is consuming more X

CASES OF CORNER SOLUTIONS

Case 1: P-R p. 88
Even with convex indifference curves
Can have MRS at X = 0
smaller than P_X / P_Y ,
so don't want to buy any X at that price
Example – my preference for Rock CDs

If budget line was sufficiently flat,
I would buy some

Case 2: Not in P-R
If indifference curves have "wrong" curvature
tangency is worst choice, not best
Optimum must be at extreme of budget line
Example – Joe Urban likes city living but not travel; concave indifference curves.
Likes LA better than NY

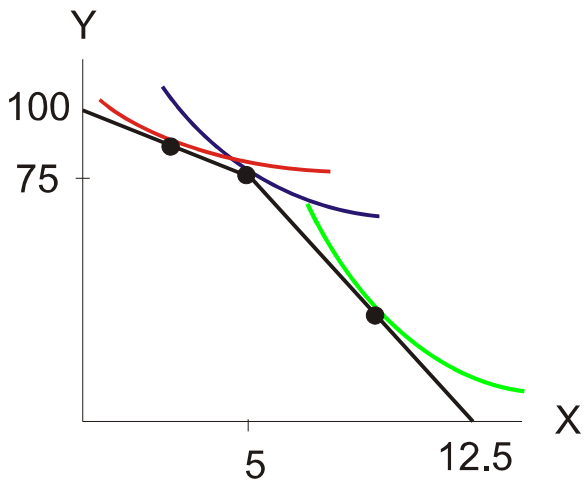


W is worst
N is "local optimum" - better than any other choices near N
L is local as well as "global optimum"

CASES OF NONLINEAR BUDGET CONSTRAINTS

Outward kink: (related to P-R pp. 88-9)

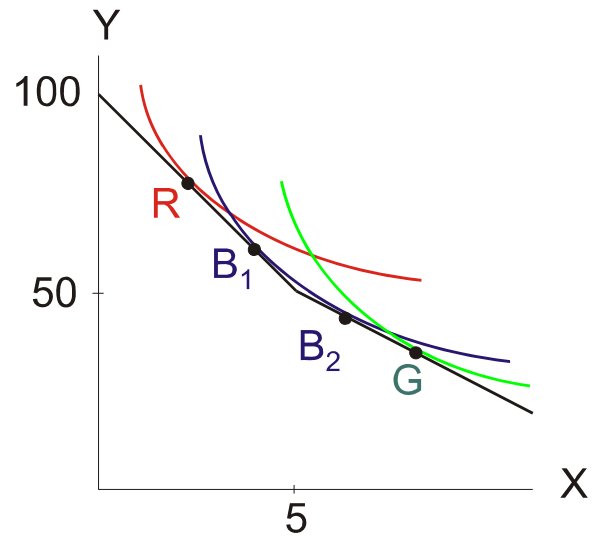
X: hours on cell phone, Y: $ on other things
First 5 hours for $5 each, rest for $10 each



Red has least taste for phoning;
flattest IC. Chooses < 5
Green has highest taste for phoning:
steepest IC. Chooses > 5
Blue in intermediate range of preferences:
chooses exactly 5, at kink
and stays there for small changes
of preferences or prices

Inward kink: (not in P-R)

X: pizzas, Y: $ on other things
Loyalty pricing: $10 each for first 5
in a month, then $5 each



Red has least taste for pizzas, buys < 5
Green has most, buys > 5
Blue is razor's edge intermediate case -
Just indifferent between B_1 and B_2
No one buys exactly 5
Small price changes can cause
discontinuous jumps in quantity