

# Economics 101 – Section 5

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Lecture #10 – February 17, 2004

The Budget Constraint  
Marginal Utility  
Consumer Choice  
Indifference Curves

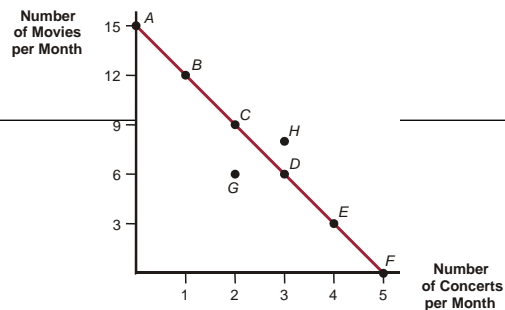
## Overview of Chapter 5 – Consumer Choice

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- The budget constraint
- Consumer utility and marginal utility
- Preferences
- Consumer decision making
- Impacts of changes in prices and income
- Market demand
- Appendix – consumer theory with indifference curves

## The budget constraint

- We all have limits to how much \$ we can spend
- A consumers **budget constraint** identifies which combinations of goods and services we can purchase with a limited budget at the given price
- The budget line is a representation of the budget constraint



Max's Consumption Possibilities with Income of \$150

	Concerts at \$30 each		Movies at \$10 each	
	Quantity	Total Expenditure on Concerts	Quantity	Total Expenditure on Movies
<b>A</b>	0	\$ 0	15	\$150
<b>B</b>	1	\$ 30	12	\$120
<b>C</b>	2	\$ 60	9	\$ 90
<b>D</b>	3	\$ 90	6	\$ 60
<b>E</b>	4	\$120	3	\$ 30
<b>F</b>	5	\$150	0	\$ 0

## The budget constraint

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- The relative price of two goods is the price of a good in terms of the other good
  - The price of one good relative to the price of the other good
  - Recall how we used this same concept when talking about comparative advantage
  - Example – price of a movie is \$8, and the price of a new cd is \$16
    - Each new cd costs 2 movies – i.e.  $16/8$

## The budget constraint

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- The slope of the budget line indicates the spending trade-off between one good and another
  - The amount of one good that must be sacrificed in order to buy one more of another good
  - If  $p_y$  is the price of the good on the horizontal axis and  $p_x$  is the price of the food on the horizontal axis, then the slope of the budget line is  $-p_x/p_y$

## The budget constraint

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- The general equation for the budget line in a two-good scenario
  - $I$  – is the total amount of \$ available to spend on the two goods
  - $Y$  and  $X$  are the quantities of each good you wish to purchase
  - The following equation implies what is spent on the goods is equal to how much is available for spending

$$I = p_x X + p_y Y$$

## The budget constraint

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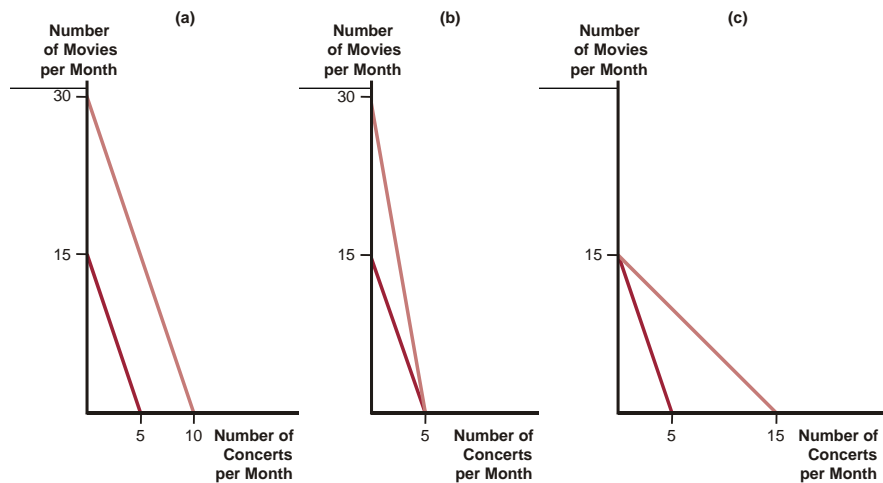
- The equation for the budget line will be

$$Y = \frac{I}{p_y} - \frac{p_x}{p_y} X$$

## The budget constraint

- What happens when income or prices change?
  - Price of a good goes down, can buy more
  - Price of a good goes up, can buy less
  - Total income goes up, can buy more of both goods

**Figure 2** Changes in the Budget Line



## The budget constraint

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- You would never want to be consuming to the left of the budget line
  - Why?
    - You could be consuming more of at least one good with the given amount of money

## Consumer behavior

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- People like to be happy
- In economics we use the term “utility” to represent different levels of happiness, preference, or satisfaction
- Higher levels of satisfaction imply higher levels of utility
- Example – I get utility (satisfaction) from using (consuming) my Ford Escort
  - I would get more utility (greater satisfaction) from using a SAAB 9-5

## Consumer behavior

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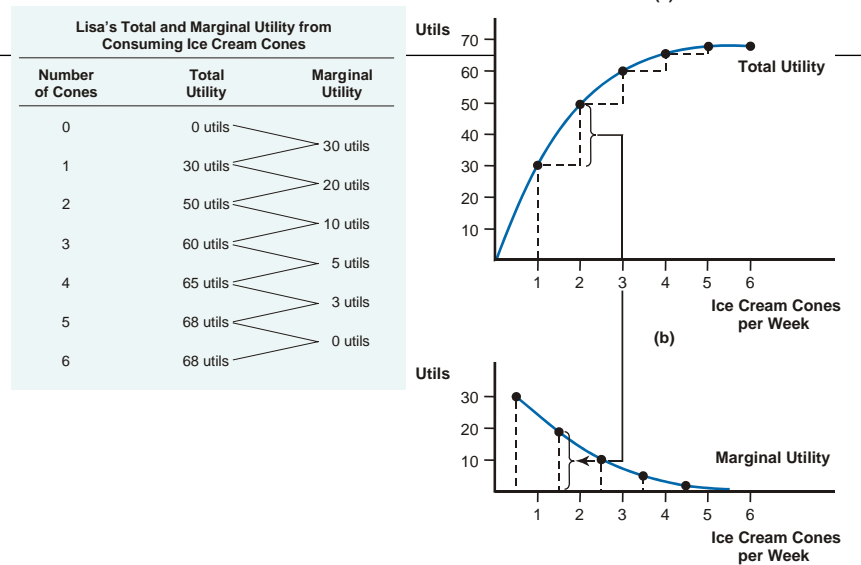
- I get utility (satisfaction) from consuming one steak at the Broiler
  - I get a higher overall utility from having two steaks at the broiler
  - I will probably enjoy the second steak a little less than the first steak, but will definitely get greater over all utility (satisfaction) from two steaks rather than one.

## Consumer behavior

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- Suppose I get 20 “utils” or 20 “satisfaction” points from consuming one steak and I get 30 utils from consuming 2 steaks in total
  - The marginal gain from the second steak is 10 utils, or 10 additional satisfaction points over the first steak
  - The marginal utility of the second steak is 10 utils
- Example – eating ice cream cones

**Figure 3 Total and Marginal Utility**



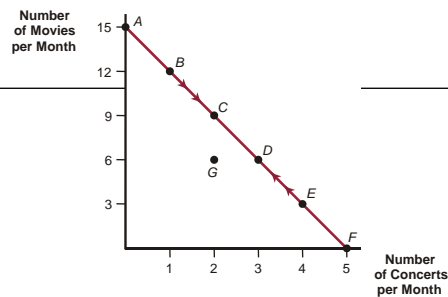
## Consumer behavior

- Note – We have the option of free disposal
  - The next 7<sup>th</sup> or 8<sup>th</sup> cone may start to make us sick and decrease our overall level of utility or satisfaction
  - Instead of doing this we are allowed to throw these extra cones that would make us worse off away

# Consumer behavior

- Rationality – for our economic models to make sense with respect to consumer behavior we need
  - 1) Any two alternatives (this could be either goods, situations, scenarios, etc) can be compared and one alternative is preferred to the other or both are equally preferred, and
  - 2) The comparisons are logically consistent

**Figure 4 Consumer Decision Making**



(1) Point on Budget Line	(2) Number of Concerts per Month	CONCERTS at \$30 each		MOVIES at \$10 each		
		(3) Marginal Utility from Last Concert	(4) Marginal Utility per Dollar Spent on Last Concert ( $MU_{concerts} / P_{concerts}$ )	(5) Number of Movies per Month	(6) Marginal Utility from Last Movie	(7) Marginal Utility per Dollar Spent on Last Movie ( $MU_{movies} / P_{movies}$ )
A	0	—	—	15	50	5
B	1	1,500	50	12	100	10
C	2	1,200	40	9	150	15
<b>D</b>	<b>3</b>	<b>600</b>	<b>20</b>	<b>6</b>	<b>200</b>	<b>20</b>
E	4	390	13	3	350	35
F	5	300	10	0	—	—

## Consumer decision making

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- Where are consumers going to be the best off?
- What is the best mix between the different goods at the different prices?
- To determine what is the optimal we need to look at the marginal effects
  - That is, where is the marginal benefit (marginal satisfaction) of the next unit of consumption of one good is equal to the marginal benefit of another good while taking into consideration the different prices

## Consumer decision making

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- Need to look for a point where the marginal benefits per dollar spent are the same
- A **utility maximizing consumer** will choose the point on the budget line where marginal utility per dollar is the same for both goods.
  - At this point there is no further gain from reallocating expenditures in either direction.



## Consumer behavior

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- Note: When making our decisions in practice we do not go through trying to compute how many “utils” we are gaining on the margin for each dollar spent for each good.
  - We each go through this process every day without drawing graphs and writing down equations
  - What is important from an economic standpoint is that for replicating consumer behavior we need to build models that are consistent with consumer behavior and follow the same logic
  - Using these models we can replicate what consumers actually do!