Last week I said you cannot afford a sports car after graduation...

(because government takes **so** much of your money)

A confession: I lied.

A confession: I lied.

- You can still get a sports car.

A confession: I lied.

- You can still get a sports car.

How?!

Make a lot of money!

Make a lot of money!

- Get to the top 1% of income earners.

Make a lot of money!

- Get to the top 1% of income earners.

- How to get there??!!

Go to college.

- Ok. What should I study there?

Go to college.

- Ok. What should I study there?

- Let's go to the evidence.

Mathematics	840,137	3.9%	1.7%
English Language and Literature	1,938,988	3.8%	3.8%
Miscellaneous Biology	52,895	3.7%	0.1%

Accounting	2,296,601	3.9%	4.7%
Mathematics	840,137	3.9%	1.7%
English Language and Literature	1,938,988	3.8%	3.8%
Miscellaneous Biology	52,895	3.7%	0.1%

Philosophy and Religious Studies	448,095	4.3%	1.0%
Microbiology	147,954	4.2%	0.3%
Chemical Engineering	347,959	4.1%	0.8%
Physics	346,455	4.1%	0.7%
Pharmacy, Pharmaceutical Sciences and Administration	334,016	3.9%	0.7%
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Source: 2010 American Communty Survey, via ipums.org

Business Economics	108,146	4.6%	0.3%
Miscellaneous Psychology	61,257	4.3%	0.1%
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Art History and Criticism	137,357	5.9%	0.4%
Chemistry	780,783	5.7%	2.4%
Molecular Biology	64,951	5.6%	0.2%
Area, Ethnic and Civilization Studies	184,906	5.2%	0.5%
Finance	1,071,812	4.8%	2.7%
History	1,351,368	4.7%	3.3%
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Political Science and Government	1,427,224	6.2%	4.7%
Physiology	98,181	6.0%	0.3%
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English Language and Literature	1,938,988	3.8%	3.8%

Undergraduate Degree	Total	% Who Are 1 Percenters	Share of All 1 Percenters
Economics	1,237,863	8.2%	5.4%
Biochemical Sciences	193,769	7.2%	0.7%
Zoology	159,935	6.9%	0.6%
Biology	1,864,666	6.7%	6.6%
International Relations	146,781	6.7%	0.5%
Political Science and Government	1,427,224	6.2%	4.7%
Physiology	98,181	6.0%	0.3%
Art History and Criticism	137,357	5.9%	0.4%
Chemistry	780,783	5.7%	2.4%
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=> What we study here has value..

$=>$ What we study here has value..

.. and thus we have to work for it.

On a more serous note:

On a more serous note:

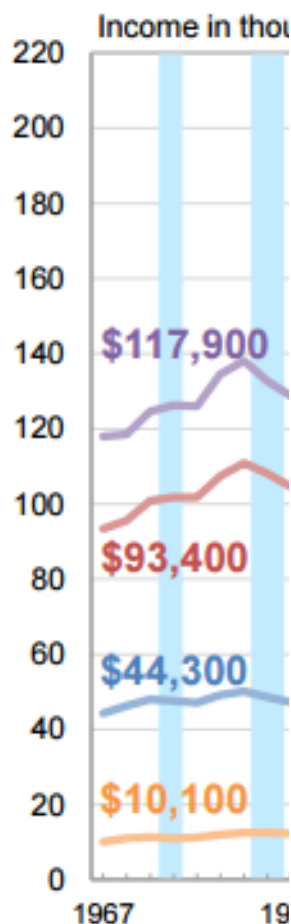"Getting a college degree is more important than ever

What's the evidence?

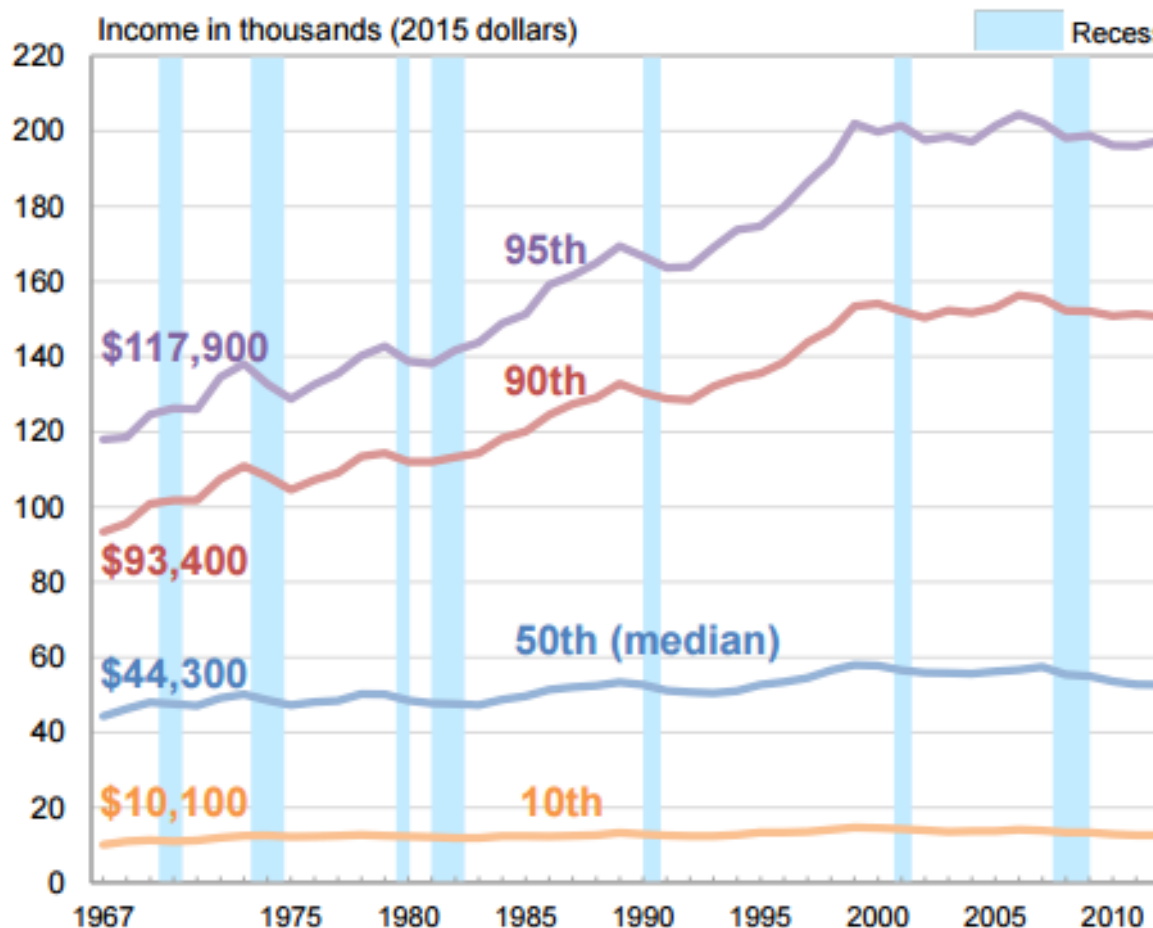# How have incomes evolved in the U.S. since 1967?

In 1967

- 10th percentile earned \$10k

- 50th percentile earned \$44k

- 90th percentile earned \$93k

- 95th percentile earned \$117k
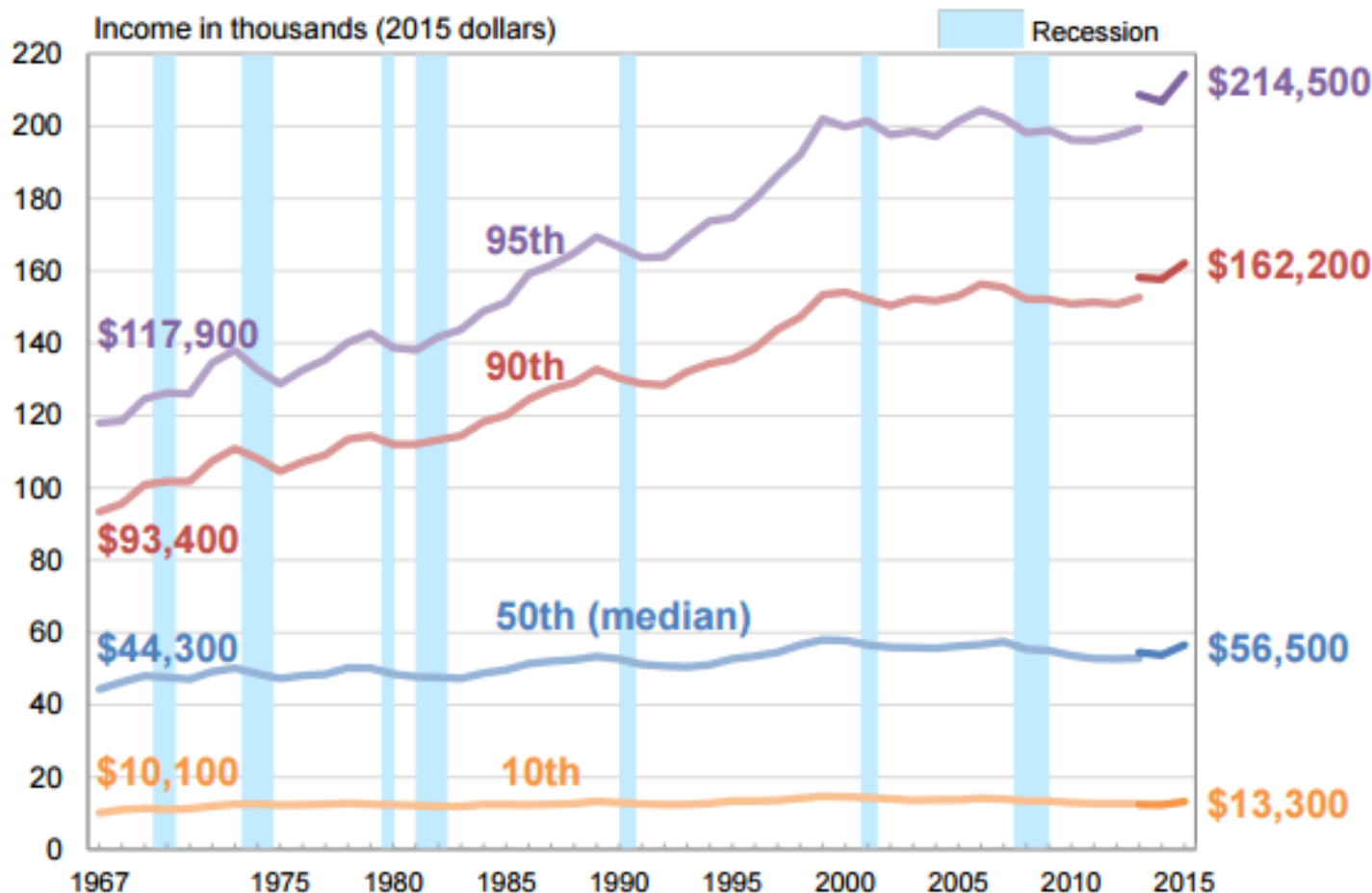
How have these evolved since?

Real Household Income at Selected Percentiles: 1967 to 2015

Income in thou

- $117,900
- $93,400
- $44,300
- $10,100

1967   19

Note: The data for 2013 and beyond reflect the implementation of the redesigned income questions.
Income rounded to nearest $100.
Source: U.S. Census Bureau, Current Population Survey, 1968 to 2016 Annual Social and Economic
Supplements.

Real Household Income at Selected Percentiles: 1967 to 2015

Real Household Income at Selected Percentiles: 1967 to 2015

Income in thousands (2015 dollars)

Recession

95th — $214,500
90th — $162,200
50th (median) — $56,500
10th — $13,300

$117,900
$93,400
$44,300
$10,100

Note: The data for 2013 and beyond reflect the implementation of the redesigned income questions. Income rounded to nearest $100.
Source: U.S. Census Bureau, Current Population Survey, 1968 to 2016 Annual Social and Economic Supplements.

Conclusion:

- Increased in income inequality since 1970

Conclusion:

- Increased in income inequality since 1970

- Stagnant incomes for bottom 50%

Role of education?
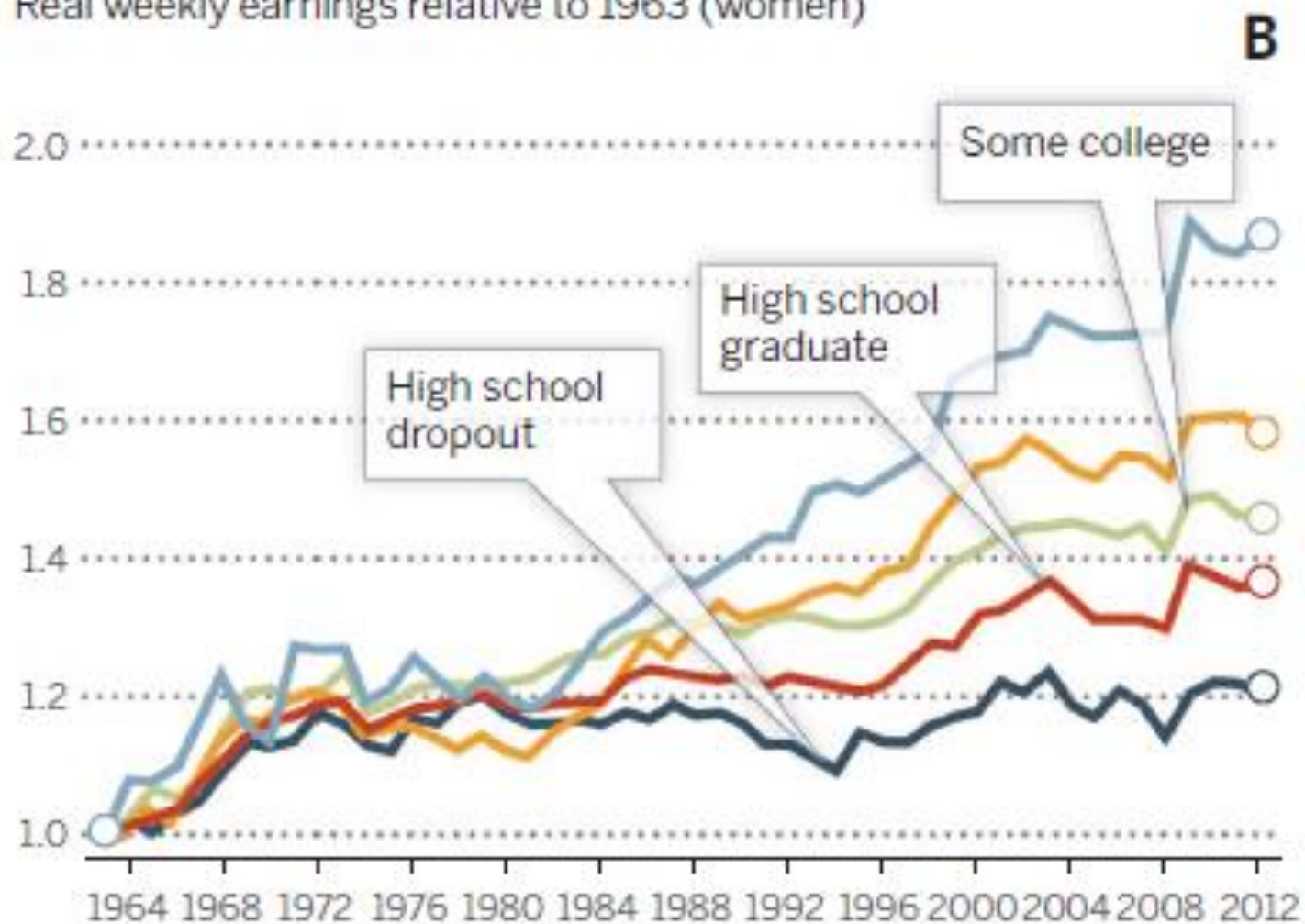
Changes in real wage levels of full-time U.S. workers

Real weekly earnings relative to 1963 (men)

A

> Bachelor's degree

Bachelor's degree
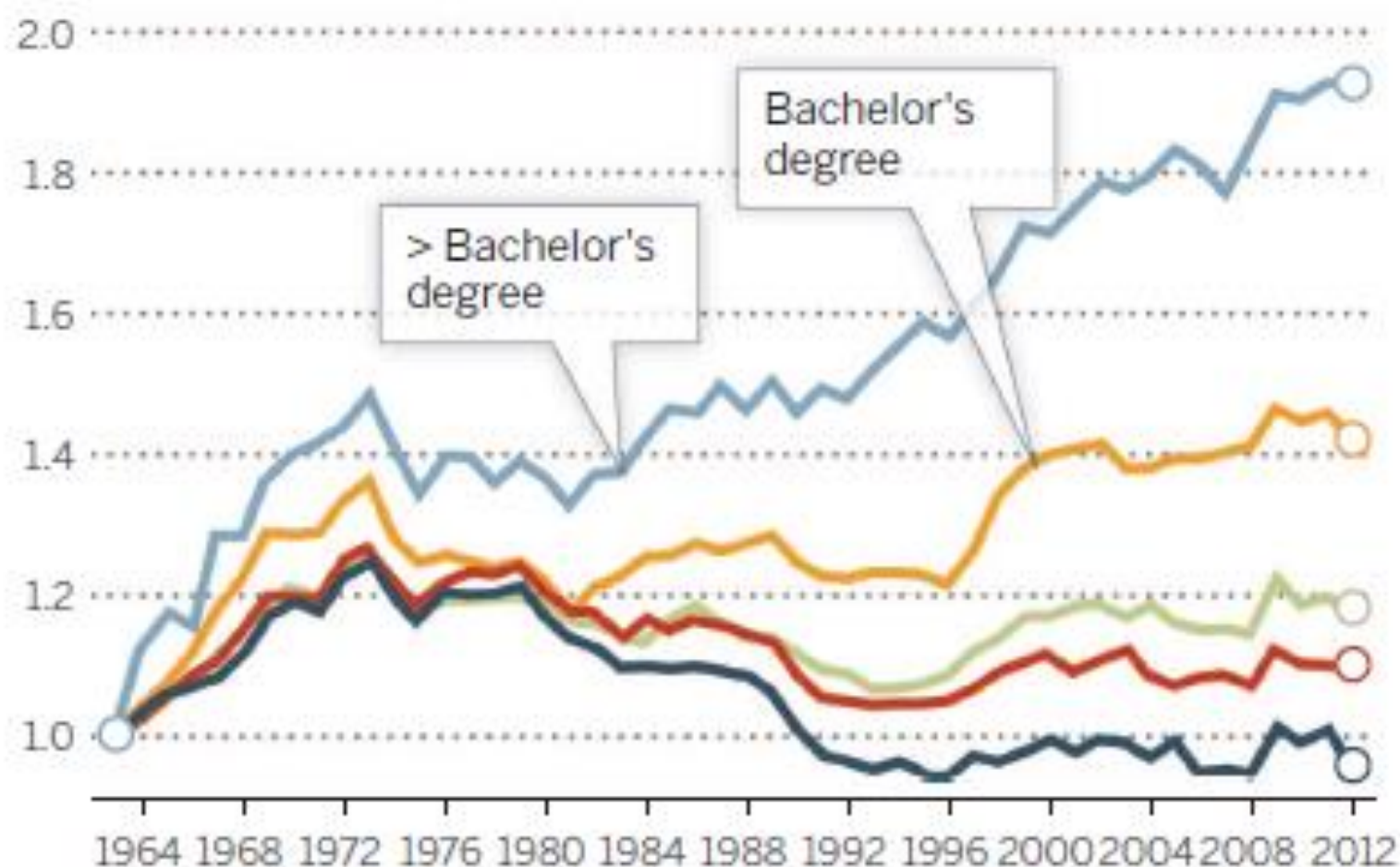
rs by sex and education, 1963–2012

Real weekly earnings relative to 1963 (women)

B

Conclusion:

- Large increase in income inequality

- Stagnation in median earnings

Conclusion:

- Large increase in income inequality

- Stagnation in median earnings

- College wage "premium" higher than before

Conclusion:

- Large increase in income inequality

- Stagnation in median earnings

- College wage "premium" higher than before

=> Stay in school

Conclusion:

- Large increase in income inequality

- Stagnation in median earnings

- College wage "premium" higher than before

$=>$ Stay in school **and complete it**

We return to these issues (inequality, stagnation, return to education) in weeks 10-12.

Recap

Our motivation to study econ 101..

Government decides how 30-60% of resources are allocated.

Is this a good thing?

Why should <u>any</u> resources be allocated through collective decision making?

Or should government decide how <u>100%</u> of resources are allocated?

For this course, the question

"How Big Should Government Be?"

forms the common motivating thread.

We will first compare a market economy and a command economy.

We will first compare a market economy and a command economy.

What do we need to learn to do that comparison?

1. Who gets what in a market economy

1. Who gets what in a market economy

- Consumer Choice

    (WEEKS 1-2)

1. Who gets what in a market economy

   - Consumer Choice

     (WEEKS 1-2)

   - Interaction through the Market

     (WEEK 3)

2. Who gets what in a command economy

(WEEK 4)

3. How to measure and compare well-being in the two economic systems

(WEEK 4)

Economists' favorite assumption:

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- People carefully evaluate costs and benefits of each action

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- Then choose the best available action

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"Behavior is optimization"

Model with one good

- **Total willingness to pay** schedule is one way to model benefits

- Prices capture costs

Optimal choice obtained through

"marginal analysis"

Optimal choice obtained through

"**marginal analysis**"

- Compare **benefit** from additional unit against **cost** of additional unit

- An optimizing individual keeps buying as long as

"**marginal** benefit $\geq$ **marginal** cost"

A Review Question

TRUE or FALSE?

- An optimizing individual maximizes marginal benefit

FALSE!

- Instead, an optimizing individual maximizes net benefit:

"total benefit - total cost"

TRUE or FALSE?

We assume people maximize **marginal benefit**?

FALSE

- That would be the same as maximizing ADDITIONAL benefit.

TRUE or FALSE?

We assume people maximize **marginal net benefit**?

FALSE

- That would be the same as maximizing the difference between ADDITIONAL benefit and ADDITIONAL cost.

Instead:

We assume people maximize total net benefit.

What is the role of marginal analysis then?

Marginal analysis is just a solution technique – helps us find the optimal decision that maximizes net benefit.

New material

Introduction to Microeconomics

Topic 2

A Model of Consumer Choice with Multiple Goods

This week's objective: Explain and predict

- consumer's choices

- how changes in price and income

affect choices and well-being

Economists' description of a consumer's decision-making:

Economists' description of a consumer's decision-making:

1) Objectives: what does she like?

Economists' description of a consumer's decision-making:

1) <u>Objectives</u>: what does she like?

2) <u>Constraints</u>: what does she have?

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1) <u>Objectives</u>: what does she like?

2) <u>Constraints</u>: what does she have?

3) Optimization assumption

Economists' description of a consumer's decision-making:

1) <u>Objectives</u>: what does she like?

2) <u>Constraints</u>: what does she have?

3) Optimization assumption

Class 3: Steps 1 and 2.

Class 4: Step 3.

Introduction to Microeconomics

Class 3

The Budget Constraint and Preferences

First: **the constraints**

How to describe what the consumer has?

Budget constraint

$$\text{expenses} \leq \text{income}$$

Budget constraint

$$\text{expenses} \leq \text{income}$$

Hereafter referred to as "BC".

At the optimum

$$\text{expenses} = \text{income}$$

Formally

$$p_1 x_1 + p_2 x_2 \leq m$$

p_1, p_2 are prices

x_1, x_2 are quantities

m is income

Budget set

Combinations (x_1, x_2) that satisfy

BC.

Budget line

Combinations (x_1, x_2) that satisfy

BC exactly

Budget line formally

$$p_1 x_1 + p_2 x_2 = m$$

Budget line formally

$$p_1 x_1 + p_2 x_2 = m$$

How to draw a budget line?

Rearrange budget line to get

$$x_2 = \frac{m}{p_2} - \frac{p_1}{p_2}x_1$$

Intercept of budget line

$$\frac{m}{p_2}$$

Intercept of budget line

$$\frac{m}{p_2}$$

Slope of budget line

$$-\frac{p_1}{p_2}$$

Intercept of budget line

$$\frac{m}{p_2}$$

Slope of budget line

$$-\frac{p_1}{p_2}$$

[Figure 3.1]

Budget line

- Many ways to label axes

Budget line

- Depicts **just** affordable combinations

Budget line

- Depicts **just** affordable combinations

- Assume: consumer lives just one day

Budget line

- Depicts **just** affordable combinations

- Assume: consumer lives just one day

$=>$ **No savings motive in the model**

Budget line

- Depicts **just** affordable combinations

- Assume: consumer lives just one day

$=>$ **No savings motive in the model**

$=>$ Optimum (next class) will be the budget line

Slope of budget line

$$-\frac{p_1}{p_2}$$

captures *opportunity cost* of good 1.

Here (the absolute value of)
$$-\frac{p_1}{p_2}$$

captures how much of good 2 consumer has to give up to get 1 more unit of good 1.

Opportunity cost

$\equiv$ what you have to give up to get more of something else.

Resources are scarce

=> everything has an opportunity cost.

Example:

- A sick kid in Hospital

Example:

- A sick kid in Hospital

- Treatment costs $17,000,000

Example:

- A sick kid in Hospital

- Treatment costs $17,000,000

- Kid dies without the treament

Example:

- A sick kid in Hospital

- Treatment costs $17,000,000

- Kid dies without the treament

Should government buy the treatment?

Unfortunately, we need to ask

- What we else could we do with that money?

Unfortunately, we need to ask

- What we else could we do with that money?

- Save 100 kids suffering from less expensive diseases?

More about drawing the BC

What happens when income increases?

[Figure 3.2]

What happens when the price of good 1 increases?

[Figure 3.3]

What we just examined: Consumer's **constraints**

Next: Consumer's **objectives**

- What does the consumer want?

Objectives captured by:

- preferences

Objectives captured by:

- preferences

(and the "behavior is optimization" assumption)

Preferences rank combinations (x_1, x_2) relative to combinations (y_1, y_2).

Notation $(x_1, x_2) \succ (y_1, y_2)$ means that

(x_1, x_2) is *strictly preferred* to (y_1, y_2)

In other words, the consumer thinks that getting amount x_1 of good 1 and amount x_2 of good 2

is DEFINITELY better than

getting amount y_1 of good 1 and amount y_2 of good 2

Notation $(x_1, x_2) \sim (y_1, y_2)$ means

indifference

between (x_1, x_2) and (y_1, y_2)

In other words, the consumer thinks that getting amount x_1 of good 1 and amount x_2 of good 2

is JUST AS GOOD as

getting amount y_1 of good 1 and amount y_2 of good 2

Notation $(x_1, x_2) \succeq (y_1, y_2)$ means that either

$$(x_1, x_2) \succ (y_1, y_2)$$

or

$$(x_1, x_2) \sim (y_1, y_2).$$

Preferences rank even combinations that aren't affordable to the consumer.

Three assumptions about preferences

Preferences are <u>Complete</u>:

Any two combinations can be compared

Preferences are <u>Reflexive:</u>

Any combination at least as good as itself

Preferences are <u>Transitive</u>:

If $(x_1, x_2) \succeq (y_1, y_2)$

and $(y_1, y_2) \succeq (z_1, z_2)$

then $(x_1, x_2) \succeq (z_1, z_2)$

Indifference curve

depicts combinations among which

a consumer is indifferent

[Figure 3.4]

Assume: Consumers prefer more to less

$=>$ Consumers prefer combinations on

more outward indifference curves

[Figure 3.5]

Result: Indifference curves cannot cross

[Figure 3.6]

Convex preferences

Average of combinations among which

   a consumer is indifferent,

   is preferred to the combinations

   themselves

[Figure 3.7]

More about the slope of the BC

Marginal rate of substitution (MRS)

- "How many units of good 2 are you

  willing to give up to get

  one more unit of good 1"

Marginal rate of substitution (MRS)

- "How many units of good 2 are you

   willing to give up to get

   one more unit of good 1"

- Willingness to trade between goods

MRS

$$= \text{Slope of an indifference curve}$$

[Figure 3.8]

Result: Convex indifference curves

have diminishing |MRS|

Result: Convex indifference curves

have diminishing |MRS|

"the more good 1 you have,

the less of good 2 willing to give up

to get 1 more unit of good 1"

[Figure 3.9]

Does this property apply to your preferences?

Does this property apply to your prefer-ences?

- Probably.

Does this property apply to your preferences?

- Probably.

- Can you think of a case when it does not apply?

Our preferences typically have diminishing $|\text{MRS}|$

$=>$ Makes sense to assume convex preferences

Six clarifying remarks about ICs

ICs

(1) Depict consumer tastes ("preferences")

ICs

(2) An indifference curve goes through every point (**I don't have time to draw them all..**)

ICs

(3) *Usually*, though not always, convex (in other words, exhibit diminishing MRS)

ICs

(4) Cannot cross!

ICs

(5) Not all of a consumer's ICs need have the same shape

(BUT his/her ICs still CANNOT cross)

ICs

(6) If two consumers' prefs are different $=>$ their ICs are different .

Summary 1:

- BC captures constraints (scarcity!)

- Preferences + "behavior is optimization" assumption capture objectives

Summary 2:

- Key assumptions about preferences:

1) "More of everything is better"

2) Transitivity

3) Diminishing marginal benefit

(ICs are *usually* convex)

Summary 3:

Consumer depicted by:

- BC

- ICs

- Optimizing behavior

Next class:

- Optimal choice

- Describe impact of price and income

   changes on well-being