

# The Economic Way of Thinking

## Lesson 1

Ryan Safner<sup>1</sup>

<sup>1</sup>Department of Economics  
Hood College

ECON 306 – Microeconomic Analysis  
Spring 2018





# The Problem with Economics...

- Everyone thinks they are an economist



# The Problem with Economics...

- Everyone thinks they are an economist
  - Everyone “knows” what “efficiency,” “competition,” and “cost” means



# The Problem with Economics...

- Everyone thinks they are an economist
  - Everyone “knows” what “efficiency,” “competition,” and “cost” means
- Economics is *often* common sense



# The Problem with Economics...

- Everyone thinks they are an economist
  - Everyone “knows” what “efficiency,” “competition,” and “cost” means
- Economics is *often* common sense
- Conclusions reached by deep analytical thinking



# The Problem with Economics...

- Everyone thinks they are an economist
  - Everyone “knows” what “efficiency,” “competition,” and “cost” means
- Economics is *often* common sense
- Conclusions reached by deep analytical thinking
  - Common misperceptions lead most astray



# The Problem with Economics...

- Everyone thinks they are an economist
  - Everyone “knows” what “efficiency,” “competition,” and “cost” means
- Economics is *often* common sense
- Conclusions reached by deep analytical thinking
  - Common misperceptions lead most astray
- Economics is about modeling behavior, and the language of models is often mathematics



# Modeling Tools: Incentives and Equilibrium

- Economics is a way of thinking – based on a few core ideas:



# Modeling Tools: Incentives and Equilibrium

- Economics is a way of thinking – based on a few core ideas:
- People respond to incentives



# Modeling Tools: Incentives and Equilibrium

- Economics is a way of thinking – based on a few core ideas:
- People respond to incentives
  - Money, punishment, taxes and subsidies, risk of injury, reputation, profits, sex, effort, morals



# Modeling Tools: Incentives and Equilibrium

- Economics is a way of thinking – based on a few core ideas:
- People respond to incentives
  - Money, punishment, taxes and subsidies, risk of injury, reputation, profits, sex, effort, morals
- Environments adjust until they are in equilibrium



# Modeling Tools: Incentives and Equilibrium

- Economics is a way of thinking – based on a few core ideas:
- People respond to incentives
  - Money, punishment, taxes and subsidies, risk of injury, reputation, profits, sex, effort, morals
- Environments adjust until they are in equilibrium
  - Prices adjust to equalize supply and demand



# Modeling Tools: Incentives and Equilibrium

- Economics is a way of thinking – based on a few core ideas:
- People respond to incentives
  - Money, punishment, taxes and subsidies, risk of injury, reputation, profits, sex, effort, morals
- Environments adjust until they are in equilibrium
  - Prices adjust to equalize supply and demand
  - Strategies of agents in competition adjust until each is optimal given the others' actions



# Modeling Tools: Incentives and Equilibrium

Which would you buy?

1

## Customer reviews



5.0 out of 5 stars ▾

5 star	A horizontal bar filled with orange, representing 100%.	100%
4 star	A horizontal bar mostly white with a small orange segment at the beginning, representing 0%.	0%
3 star	A horizontal bar mostly white with a very small orange segment at the beginning, representing 0%.	0%
2 star	A horizontal bar mostly white with a tiny orange segment at the beginning, representing 0%.	0%
1 star	A horizontal bar mostly white with no visible orange segment, representing 0%.	0%

[See all 1 customer reviews ▾](#)

2

## Customer reviews



4.5 out of 5 stars ▾

5 star	A horizontal bar filled with orange, representing 78%.	78%
4 star	A horizontal bar mostly white with a small orange segment at the beginning, representing 12%.	12%
3 star	A horizontal bar mostly white with a very small orange segment at the beginning, representing 6%.	6%
2 star	A horizontal bar mostly white with a tiny orange segment at the beginning, representing 2%.	2%
1 star	A horizontal bar mostly white with no visible orange segment, representing 2%.	2%

[See all 161 customer reviews ▾](#)

3

## Customer reviews



3.1 out of 5 stars ▾

5 star	A horizontal bar filled with orange, representing 40%.	40%
4 star	A horizontal bar mostly white with a very small orange segment at the beginning, representing 0%.	0%
3 star	A horizontal bar mostly white with a tiny orange segment at the beginning, representing 20%.	20%
2 star	A horizontal bar mostly white with a tiny orange segment at the beginning, representing 20%.	20%
1 star	A horizontal bar mostly white with a small orange segment at the beginning, representing 20%.	20%

[See all 5 customer reviews ▾](#)



## Modeling Tools: Incentives and Equilibrium



The NYC Subway bans dogs unless they can be “enclosed in a container”

# Modeling Tools: Incentives and Equilibrium



Source

# Modeling Tools: Incentives and Equilibrium



Among other things, the **State of Virginia mandates** that all happy hours end at 9 PM, in order to discourage drunk driving.

# Modeling Tools: Incentives and Equilibrium

The government wants to reduce the rat population, and establishes a \$250 bounty for every rat pelt turned in.

# Modeling Tools: Incentives and Equilibrium

The government wants to reduce the rat population, and establishes a \$250 bounty for every rat pelt turned in.



# Even dolphins understand incentives...

Animal behaviour

## Why dolphins are deep thinkers

The more we study dolphins, the brighter they turn out to be, writes **Anuschka de Rohan**

Anuschka de Rohan

Wed 2 Jul '03 21.25 EDT



20,181  
↳



The brain of an adult bottlenose dolphin is about 25% heavier than the average human adult's brain.  
Photograph: Stephen Frink/Getty Images

Source

# Even dolphins understand incentives...

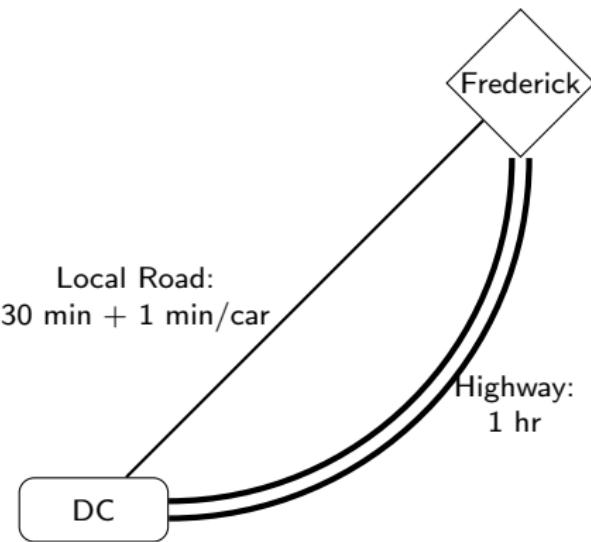
At the Institute for Marine Mammal Studies in Mississippi, Kelly the dolphin has built up quite a reputation. All the dolphins at the institute are trained to hold onto any litter that falls into their pools until they see a trainer, when they can trade the litter for fish. In this way, the dolphins help to keep their pools clean.

Kelly has taken this task one step further. When people drop paper into the water she hides it under a rock at the bottom of the pool. The next time a trainer passes, she goes down to the rock and tears off a piece of paper to give to the trainer. After a fish reward, she goes back down, tears off another piece of paper, gets another fish, and so on. This behaviour is interesting because it shows that Kelly has a sense of the future and delays gratification. She has realised that a big piece of paper gets the same reward as a small piece and so delivers only small pieces to keep the extra food coming. She has, in effect, trained the humans.

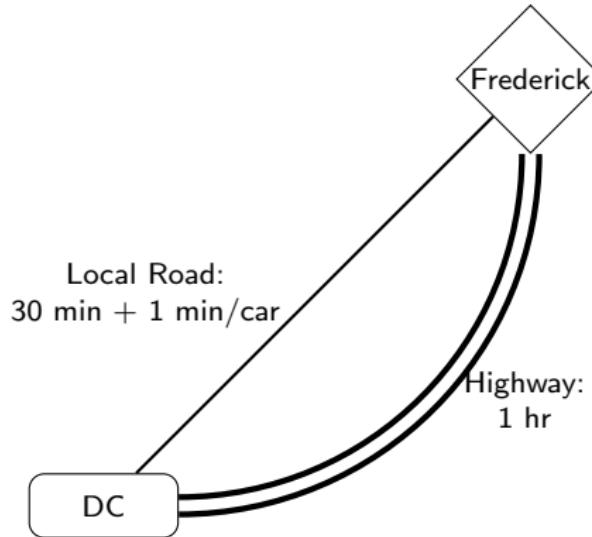
## Source



# Modeling Tools: Incentives and Equilibrium

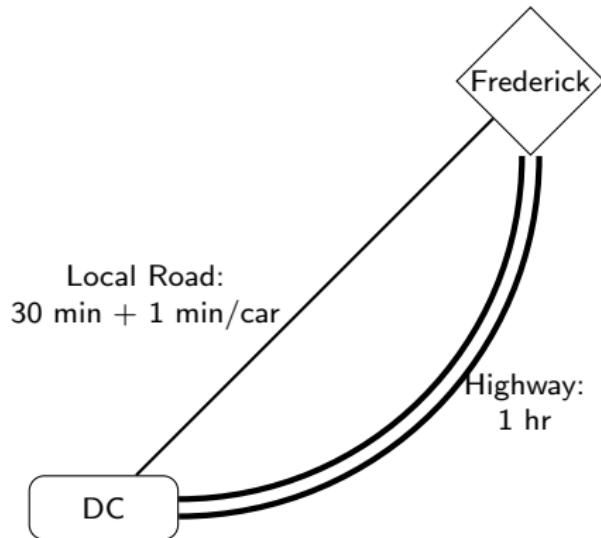


# Modeling Tools: Incentives and Equilibrium



- Suppose two roads connect Frederick & DC and 100 cars commute
  - Local Road travel time = 30 min + 1min/car
  - Highway travel time= 1 hour

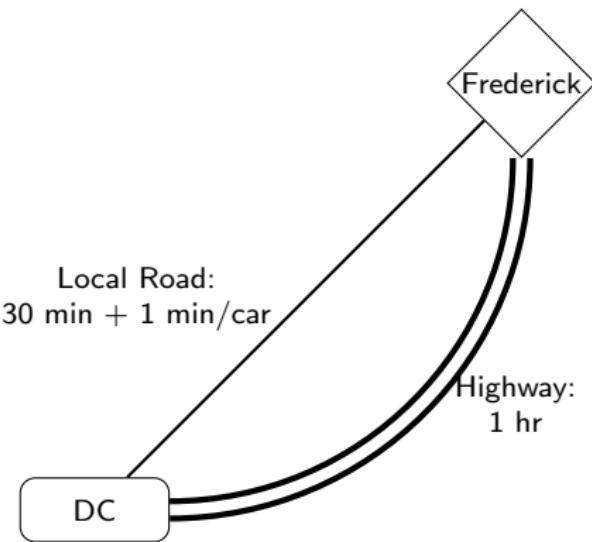
## Modeling Tools: Incentives and Equilibrium



- Suppose two roads connect Frederick & DC and 100 cars commute
    - Local Road travel time =  $30 \text{ min} + 1\text{min}/\text{car}$
    - Highway travel time= 1 hour
  - Assume people optimize:
    - Minimize travel time between cities
    - Choose the road that minimizes travel time

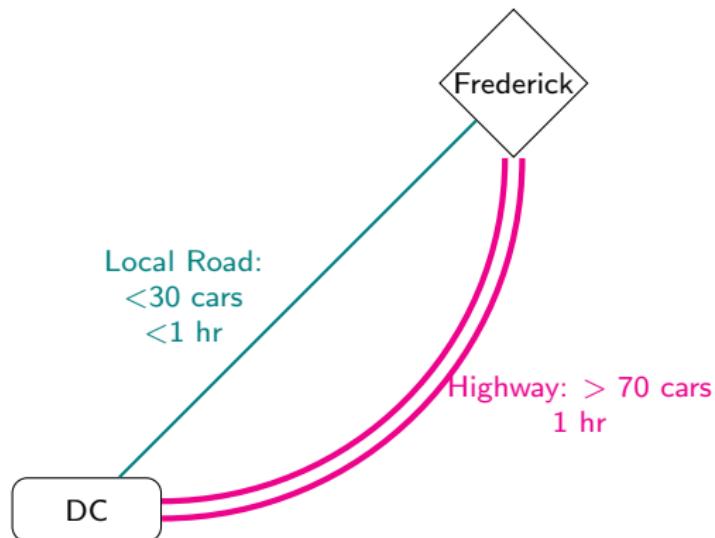


# Modeling Tools: Incentives and Equilibrium

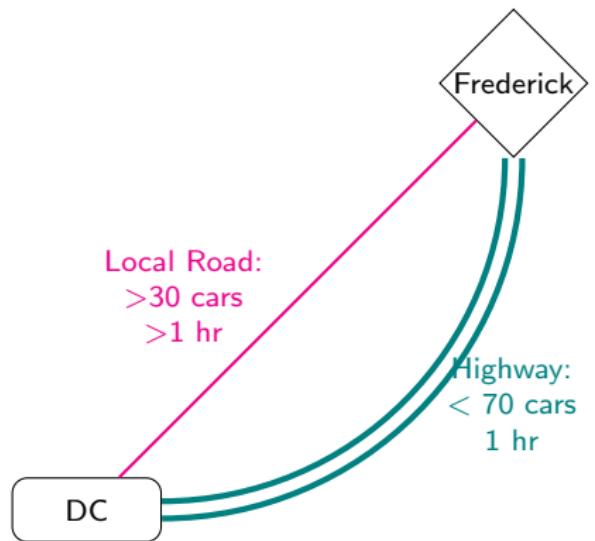


# Modeling Tools: Incentives and Equilibrium

- Suppose < 30 cars are currently driving on the local road
  - Local Road travel time < Highway travel time
  - Everyone wants to take the Local Road

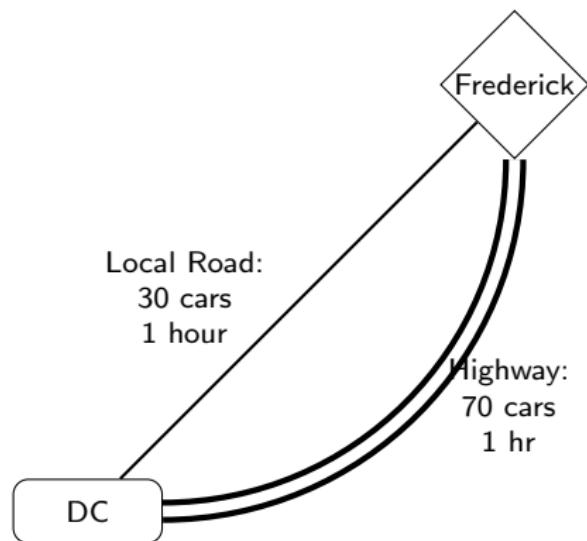


# Modeling Tools: Incentives and Equilibrium



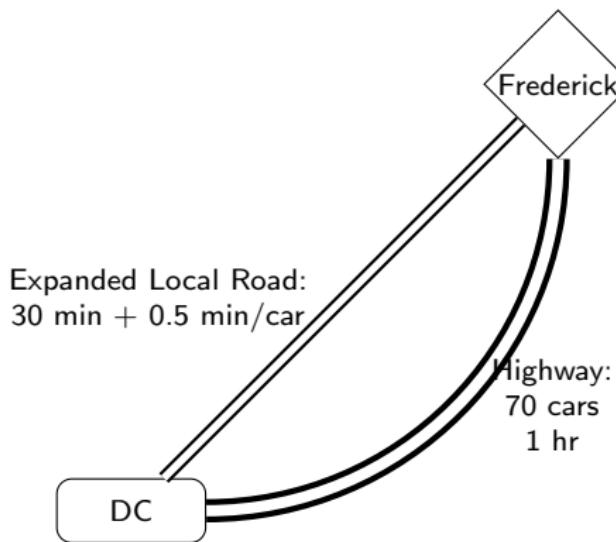
- Suppose < 30 cars are currently driving on the local road
  - Local Road travel time < Highway travel time
  - Everyone wants to take the Local Road
- Suppose > 30 cars are currently driving on the local road
  - Local Road travel time > Highway travel time
  - Everyone wants to take the Highway

# Modeling Tools: Incentives and Equilibrium



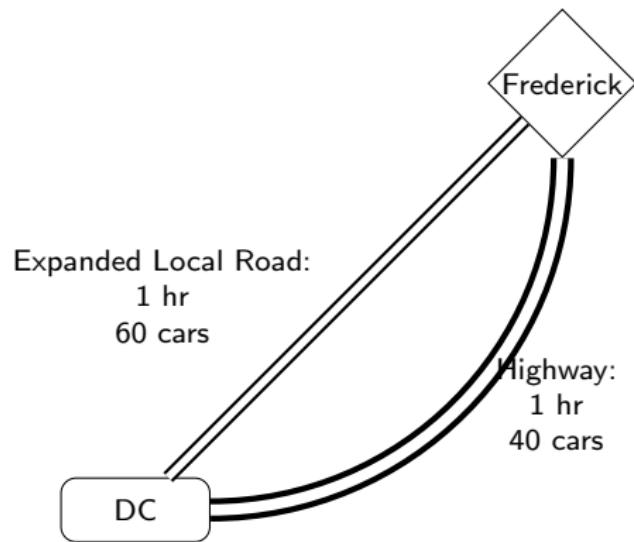
- Equilibrium: exactly 30 cars take the local road
  - Everyone becomes *indifferent* between taking the Local road vs the Highway
  - Given what everyone else is doing, nobody has an incentive to change their plans
  - If either more OR fewer cars drive on local road, incentives to switch!

# Modeling Tools: Incentives and Equilibrium



- Suppose the cities decide to double the capacity of the Local Road
- Will this reduce journey time?
- Yes, says City Council:
  - 30 people use the local road
  - Currently it takes them 1 hr
  - With wider road, it will only take them 45 minutes!
  - But is this an *equilibrium*?

# Modeling Tools: Incentives and Equilibrium



# Modeling Tools: Incentives and Equilibrium

- Comparative statics allow us to compare the changes in equilibria from an external change (in incentives, constraints, etc)
  - Equilibrium 1: 30 cars on local road, 70 cars on highway



# Modeling Tools: Incentives and Equilibrium

- Comparative statics allow us to compare the changes in equilibria from an external change (in incentives, constraints, etc)
  - Equilibrium 1: 30 cars on local road, 70 cars on highway
  - Widen the local road



# Modeling Tools: Incentives and Equilibrium

- Comparative statics allow us to compare the changes in equilibria from an external change (in incentives, constraints, etc)
  - Equilibrium 1: 30 cars on local road, 70 cars on highway
  - Widen the local road
  - Equilibrium 2: 60 cars on local road, 40 cars on highway



# Modeling Tools: Incentives and Equilibrium



# Modeling Tools: Incentives and Equilibrium

- People have incentives to switch to an alternative that provides higher value



# Modeling Tools: Incentives and Equilibrium

- People have incentives to switch to an alternative that provides higher value
- In **equilibrium**, no alternative provides any value higher than any other (i.e. they are all equal) – **the equimarginal principle**



# Modeling Tools: Incentives and Equilibrium

- People have incentives to switch to an alternative that provides higher value
- In **equilibrium**, no alternative provides any value higher than any other (i.e. they are all equal) – **the equimarginal principle**
- **Equilibrium** is a stable outcome where nobody has any incentive to change their choice



# Economics In One Slide

- Economics is a way of thinking: powerful tools based on only a few core ideas:



# Economics In One Slide

- Economics is a way of thinking: powerful tools based on only a few core ideas:
- People respond to incentives



# Economics In One Slide

- Economics is a way of thinking: powerful tools based on only a few core ideas:
- People respond to incentives
  - People accomplish their various goals according to the relative costs of the means at their disposal



# Economics In One Slide

- Economics is a way of thinking: powerful tools based on only a few core ideas:
- People respond to incentives
  - People accomplish their various goals according to the relative costs of the means at their disposal
  - Money, punishment, taxes and subsidies, ostracism, risk of injury, reputation, profits, sex, shame, guilt, effort, morals



# Economics In One Slide

- Economics is a way of thinking: powerful tools based on only a few core ideas:
- People respond to incentives
  - People accomplish their various goals according to the relative costs of the means at their disposal
  - Money, punishment, taxes and subsidies, ostracism, risk of injury, reputation, profits, sex, shame, guilt, effort, morals
  - A change in the costs or benefits tends to cause an observable change in behavior



# Economics In One Slide

- Economics is a way of thinking: powerful tools based on only a few core ideas:
- People respond to incentives
  - People accomplish their various goals according to the relative costs of the means at their disposal
  - Money, punishment, taxes and subsidies, ostracism, risk of injury, reputation, profits, sex, shame, guilt, effort, morals
  - A change in the costs or benefits tends to cause an observable change in behavior
- Environments adjust until they are in equilibrium



# Economics In One Slide

- Economics is a way of thinking: powerful tools based on only a few core ideas:
- People respond to incentives
  - People accomplish their various goals according to the relative costs of the means at their disposal
  - Money, punishment, taxes and subsidies, ostracism, risk of injury, reputation, profits, sex, shame, guilt, effort, morals
  - A change in the costs or benefits tends to cause an observable change in behavior
- Environments adjust until they are in equilibrium
  - Agents adjust their plans until each is optimal given others' actions



# Economics In One Slide

- Economics is a way of thinking: powerful tools based on only a few core ideas:
- People respond to incentives
  - People accomplish their various goals according to the relative costs of the means at their disposal
  - Money, punishment, taxes and subsidies, ostracism, risk of injury, reputation, profits, sex, shame, guilt, effort, morals
  - A change in the costs or benefits tends to cause an observable change in behavior
- Environments adjust until they are in equilibrium
  - Agents adjust their plans until each is optimal given others' actions
  - Relative prices adjust to equalize supply and demand



# Economics In One Slide

- Economics is a way of thinking: powerful tools based on only a few core ideas:
- People respond to incentives
  - People accomplish their various goals according to the relative costs of the means at their disposal
  - Money, punishment, taxes and subsidies, ostracism, risk of injury, reputation, profits, sex, shame, guilt, effort, morals
  - A change in the costs or benefits tends to cause an observable change in behavior
- Environments adjust until they are in equilibrium
  - Agents adjust their plans until each is optimal given others' actions
  - Relative prices adjust to equalize supply and demand
  - Equilibrium can be prevented by government policy or other barriers to exchange



# The Method of Economics as a “Science”

- Rational Choice Theory combines the optimization and equilibrium principles to explain nearly all human behavior



# The Method of Economics as a “Science”

- Rational Choice Theory combines the optimization and equilibrium principles to explain nearly all human behavior
- Technically “economic” subjects: consumer shopping choices, business decisions, prices of goods, stock markets, etc.



# The Method of Economics as a “Science”

- **Rational Choice Theory** combines the optimization and equilibrium principles to explain nearly all human behavior
- **Technically “economic” subjects:** consumer shopping choices, business decisions, prices of goods, stock markets, etc.
- **Political subjects:** vote-maximizing legislator, budget-maximizing bureaucrat, special interest groups, revenue-maximizing dictator



# The Method of Economics as a “Science”

- Rational Choice Theory combines the optimization and equilibrium principles to explain nearly all human behavior
- Technically “economic” subjects: consumer shopping choices, business decisions, prices of goods, stock markets, etc.
- Political subjects: vote-maximizing legislator, budget-maximizing bureaucrat, special interest groups, revenue-maximizing dictator
- Criminal subjects: rational criminal offenders, profit-seeking criminal enterprises, utility-maximizing judges



# The Method of Economics as a “Science”

- **Rational Choice Theory** combines the optimization and equilibrium principles to explain nearly all human behavior
- **Technically “economic” subjects:** consumer shopping choices, business decisions, prices of goods, stock markets, etc.
- **Political subjects:** vote-maximizing legislator, budget-maximizing bureaucrat, special interest groups, revenue-maximizing dictator
- **Criminal subjects:** rational criminal offenders, profit-seeking criminal enterprises, utility-maximizing judges
- In general, people have goals that they seek to attain, and ultimately those goal-oriented people interact, exchange, and adjust their plans until a mutually-consistent equilibrium results



# Microeconomics: A Way of Thinking

- The Impact of Legalized Abortion on Crime by John Donohue and Steven Levitt
- Corruption, Norms, and Legal Enforcement: Evidence from UN Diplomatic Parking Tickets by Ray Fisman and Edward Miguel
- Governance and Prison Gangs by David Skarbek
- Sacrifice and Stigma: Reducing Free-Riding in Cults, Communes, and Other Collectives by Laurence Iannaccone
- Why Being Wrong Can Be Right: Magical Warfare Technologies and the Persistence of False Beliefs by Nathan Nunn and Raul Sanchez de la Sierra
- A Theory of Rational Addiction by Gary Becker and Kevin Murphy
- Trial By Battle by Peter T. Leeson
- An-arrgh-chy: the Law and Economics of Pirate Organization by Peter T. Leeson
- The Endowment Effect in Capuchin Monkeys by Keith Chen, Venkat Lakshminarayanan and Laurie Santos
- Rationalist Explanations for War by James Fearon
- Why Not Hang Them All? The Virtues of Inefficient Punishment by David D Friedman



# The Method of Economics as a “Science”

- Economists use conceptual models (fictional constructions)



# The Method of Economics as a “Science”

- Economists use conceptual models (fictional constructions)
- *Very different* methods than natural sciences:
  - Imaginary constructions to *logically* examine the *consequences*



# The Method of Economics as a “Science”

- Economists use conceptual models (fictional constructions)
- *Very different* methods than natural sciences:
  - Imaginary constructions to *logically* examine the *consequences*
- Why?
  - No social experimentation
  - Purposive (and strategic) human beings
  - Introspective understanding



# The Method of Economics as a “Science”

- Economists use conceptual models (fictional constructions)
- *Very different* methods than natural sciences:
  - Imaginary constructions to *logically* examine the *consequences*
- Why?
  - No social experimentation
  - Purposive (and strategic) human beings
  - Introspective understanding
- “All models are lies: the art is telling useful lies”



# The Three Tools of Economics as a “Science”

## Optimization

- People have objectives
- People face constraints
- Achieve objectives within constraints



## Equilibrium

- People face competition
- People change behavior based on incentives
- Stable outcomes result



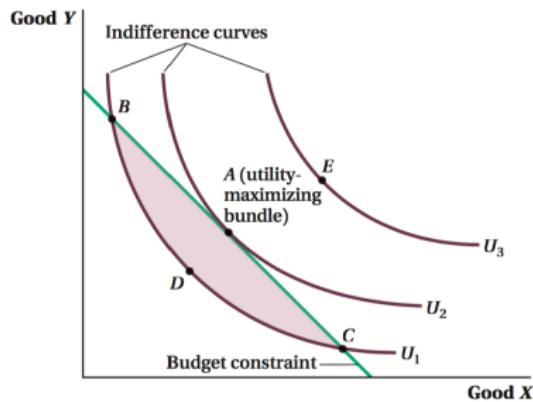
## Game Theory

- People can be strategic
- “Big” players can affect the game
- Stable outcomes can still result

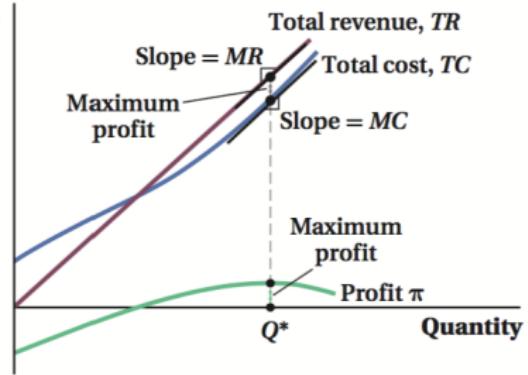


# The Method of Economics as a “Science”

- Optimization: which action best achieves an objective?

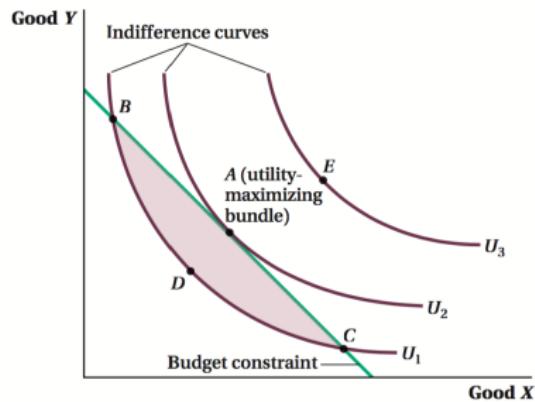


Firm revenue,  
cost, & profit (\$)

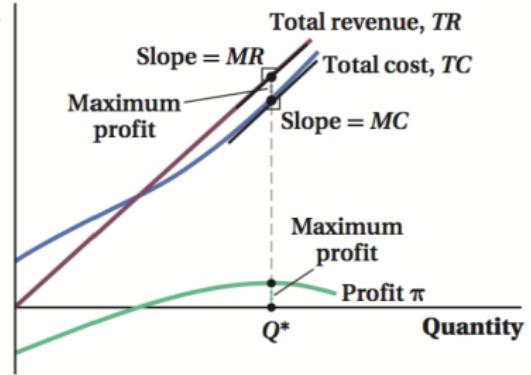


# The Method of Economics as a “Science”

- **Optimization:** which action best achieves an objective?
    - Should I buy a new car or keep my old one?

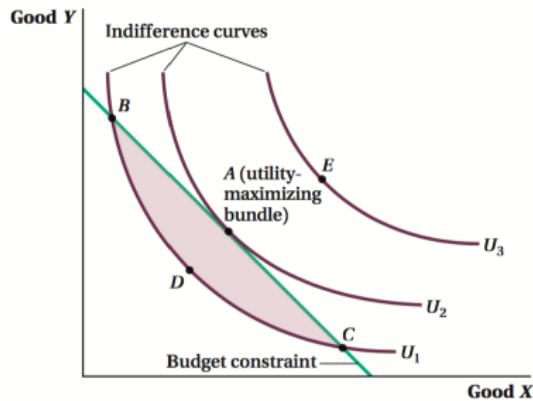


### Firm revenue, cost, & profit (\$)

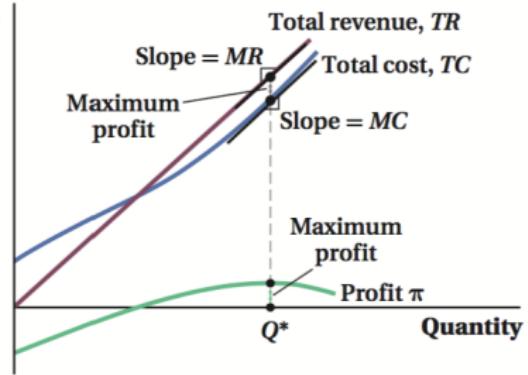


# The Method of Economics as a “Science”

- **Optimization:** which action best achieves an objective?
  - Should I buy a new car or keep my old one?
  - Should the U.S. adopt stronger or more lenient narcotics laws?



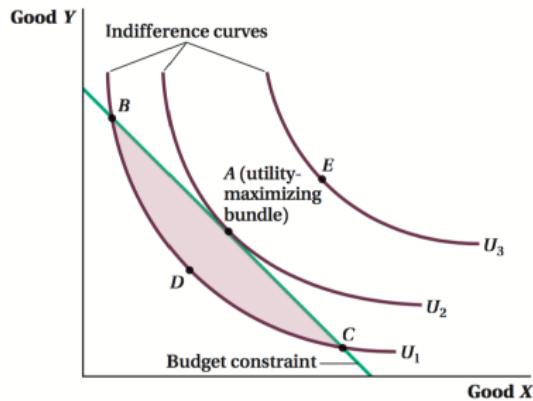
Firm revenue,  
cost, & profit (\$)



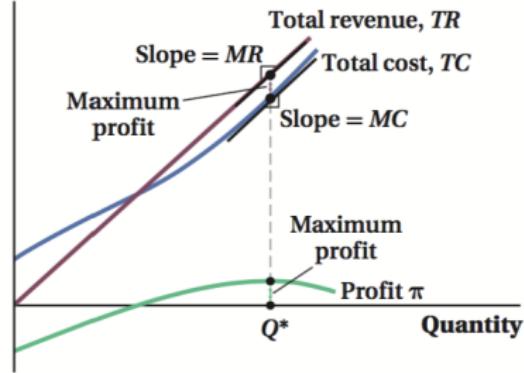
# The Method of Economics as a “Science”

- **Optimization:** which action best achieves an objective?

- Should I buy a new car or keep my old one?
- Should the U.S. adopt stronger or more lenient narcotics laws?
- Should Apple raise or lower the price of iPhones?

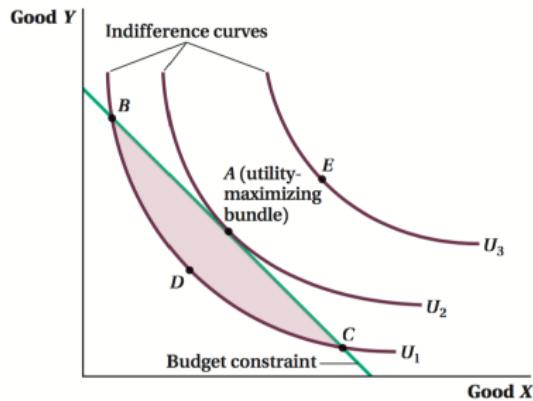


Firm revenue,  
cost, & profit (\$)

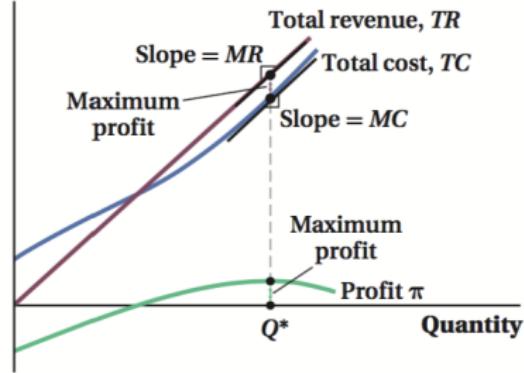


# The Method of Economics as a “Science”

- **Optimization:** which action best achieves an objective?
  - Should I buy a new car or keep my old one?
  - Should the U.S. adopt stronger or more lenient narcotics laws?
  - Should Apple raise or lower the price of iPhones?
- Answer: Find the optimum (using **marginal analysis**)

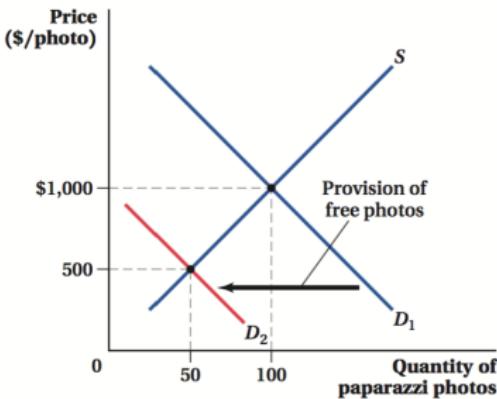
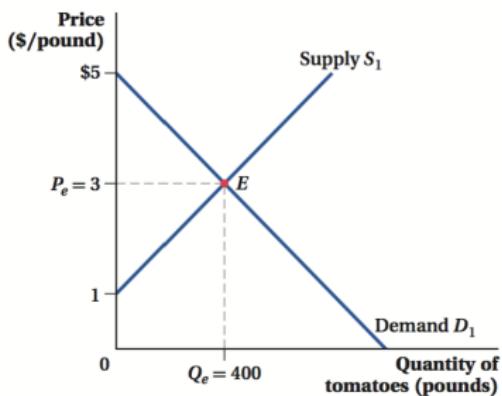


Firm revenue,  
cost, & profit (\$)



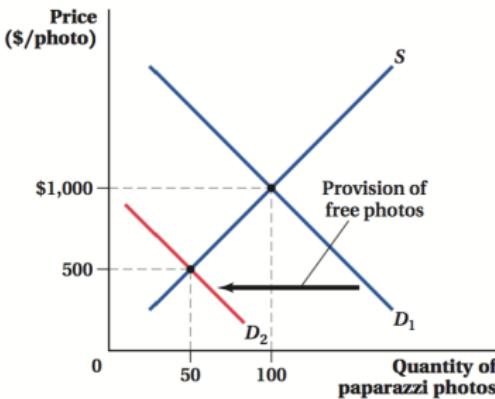
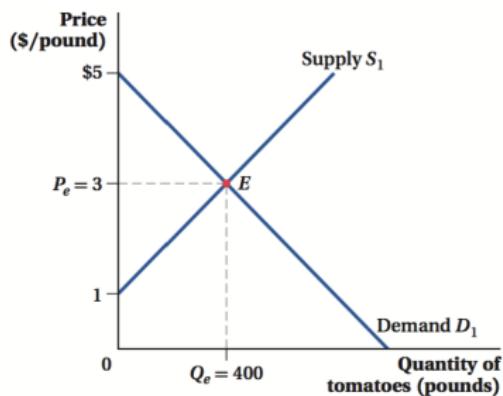
# The Method of Economics as a “Science”

- **Equilibrium:** how can we explain stable outcomes in the real world?



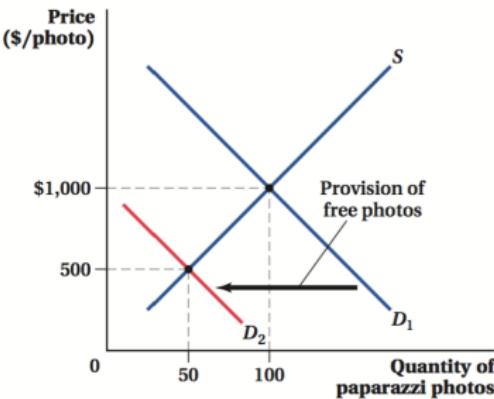
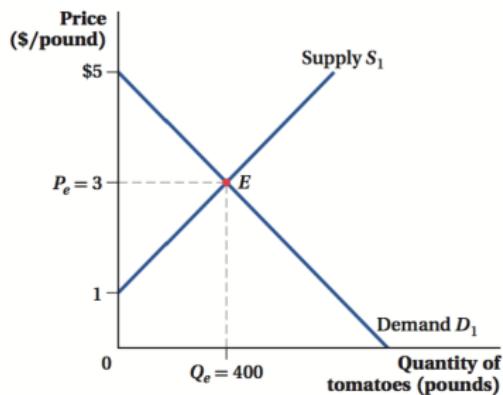
# The Method of Economics as a “Science”

- **Equilibrium:** how can we explain stable outcomes in the real world?
  - Will new car prices be lower next year?



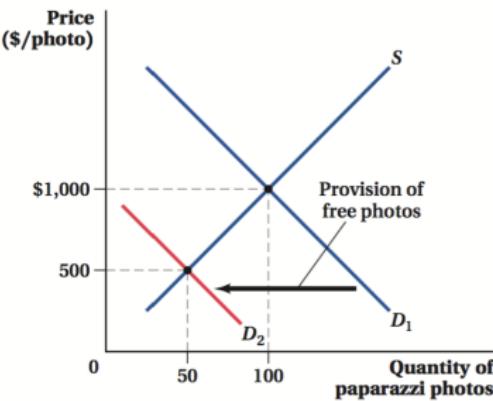
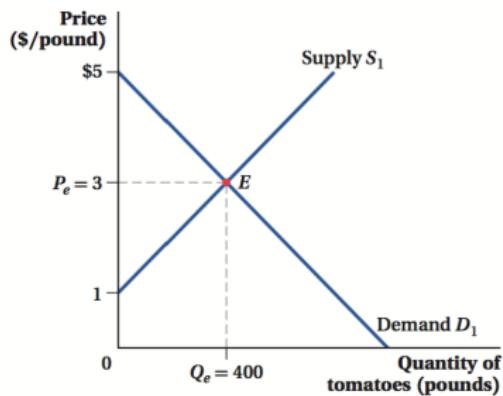
# The Method of Economics as a “Science”

- **Equilibrium:** how can we explain stable outcomes in the real world?
    - Will new car prices be lower next year?
    - If narcotics were legalized, what would happen to police budgets?



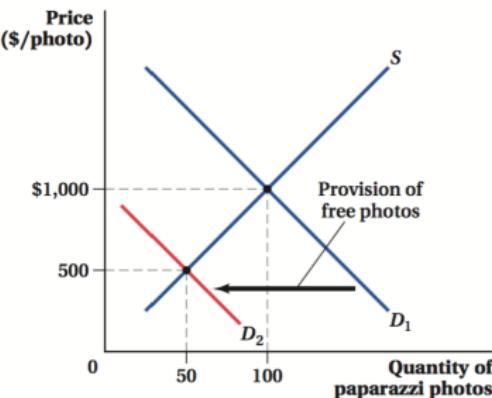
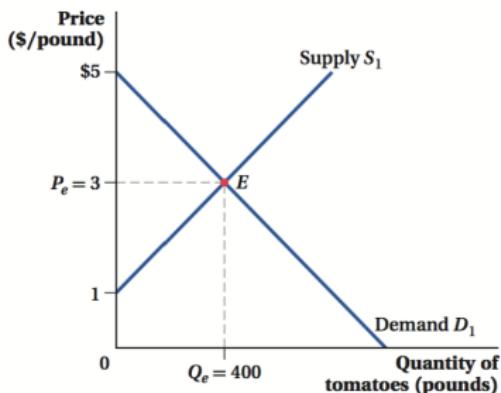
# The Method of Economics as a “Science”

- **Equilibrium:** how can we explain stable outcomes in the real world?
    - Will new car prices be lower next year?
    - If narcotics were legalized, what would happen to police budgets?
    - What happens to smartphone industry sales if Apple lowers its price?



# The Method of Economics as a “Science”

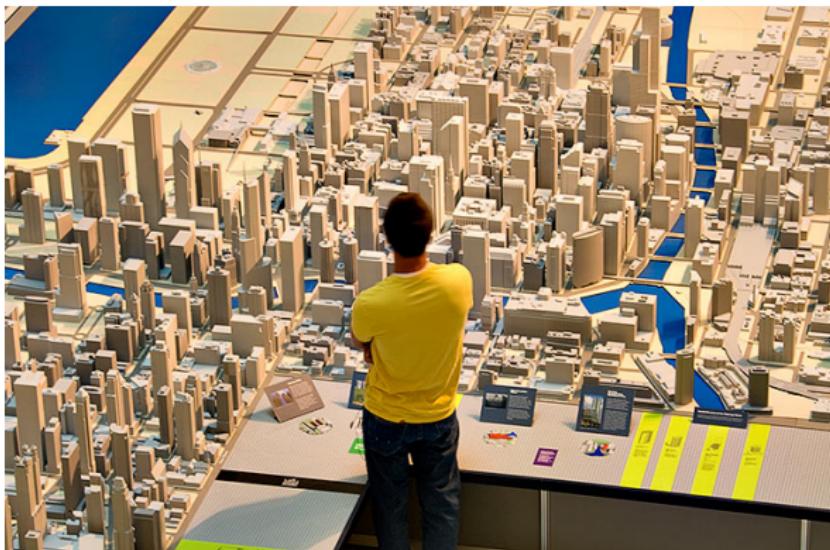
- **Equilibrium:** how can we explain stable outcomes in the real world?
  - Will new car prices be lower next year?
  - If narcotics were legalized, what would happen to police budgets?
  - What happens to smartphone industry sales if Apple lowers its price?
- Answer: Find the balance between **supply and demand**



# The Method of Economics—Caution!

## Warning

Do not conflate being able to “think like an economist” with “memorizing economic models” OR conflate reality with a model of reality!



# Three Facts About the World



# Three Facts About the World

- ① Individual people pursue various goals.



# Three Facts About the World

- ① Individual people pursue various goals.
- ② We live in a world of scarcity.



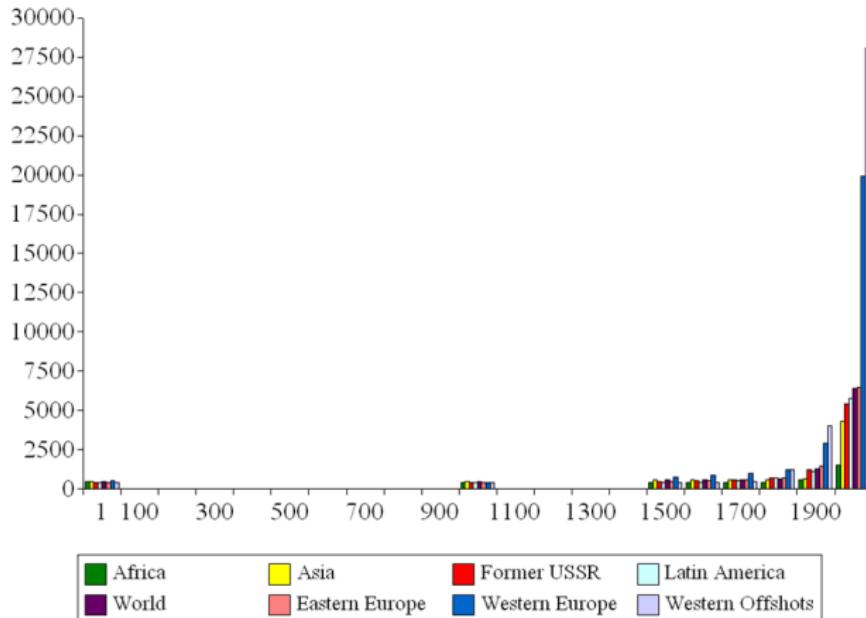
# Three Facts About the World

- ① Individual people pursue various goals.
- ② We live in a world of scarcity.
- ③ We have a functioning, complex social order.



# The “Great Fact”

World GDP/capita 1-2003 A.D.



Angus Maddison, “World Population and Per Capita GDP, 1-2003 AD”

# The “Great Fact”



# The “Great Fact”



1000 B.C. ...



# The “Great Fact”



1000 B.C. ... 1600 A.D.



# The “Great Fact”



1000 B.C. ... 1600 A.D.  
Self-sufficiency...and poverty



# The “Great Fact”



2016 A.D.  
Complete interdependence...and prosperity



# The Invisible Hand

"In civilized society [man] stands at all times in need of the cooperation and assistance of great multitudes, while his whole life is scarce sufficient to gain the friendship of a few persons... man has almost constant occasion for the help of his brethren, and it is in vain for him to expect it from their benevolence only."

*Wealth of Nations* (1776): Book I, Chapter  
2.2



Adam Smith  
(1723-1790)

# The Invisible Hand

"Men being naturally selfish, or endowed only with a confined generosity, they are not easily induced to perform any action for the interest of strangers, except with a view to some reciprocal advantage, which they had no hope of obtaining but by such a performance."

*A Treatise on Human Nature* (1740): Book III, Part II, §V



David Hume  
(1711-1776)

# The Invisible Hand

"Whoever offers to another a bargain of any kind, proposes to do this. Give me that which I want, and you shall have this which you want, . . . and it is in this manner that we obtain from one another the far greater part of those good offices which we stand in need of. It is not from the benevolence of the butcher, the brewer, or the baker, that we expect our dinner, but from their regard to their own interest."

*Wealth of Nations* (1776): Book I, Chapter 2.2



Adam Smith  
(1723-1790)

# The Invisible Hand

"[Though] he intends only his own gain, and he is in this, as in many other cases, led by an *invisible hand* to promote an end which was no part of his intention... By pursuing his own interest he frequently promotes that of the society more effectually than when he really intends to promote it."

*Wealth of Nations* (1776): Book IV, Chapter  
2.9



Adam Smith  
(1723-1790)

# Formalizing The Invisible Hand

"Though he intends only his own gain, and he is in this, as in many other cases, led by an invisible hand to promote an end which was no part of his intention... By pursuing his own interest he frequently promotes that of the society more effectually than when he really intends to promote it."

*Wealth of Nations* (1776):  
Book IV, Chapter 2.9



# Formalizing The Invisible Hand

“Though he intends only his own gain, and he is in this, as in many other cases, led by an invisible hand to promote an end which was no part of his intention... By pursuing his own interest he frequently promotes that of the society more effectually than when he really intends to promote it.”

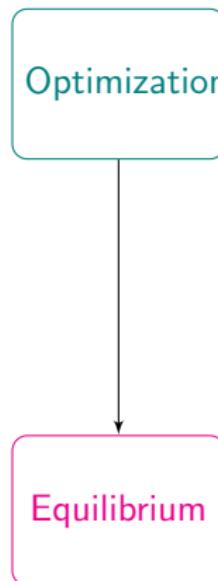
*Wealth of Nations* (1776):  
Book IV, Chapter 2.9

Optimization

## Formalizing The Invisible Hand

"Though he intends only his own gain, and he is in this, as in many other cases, led by an invisible hand to promote an end which was no part of his intention... By pursuing his own interest he frequently promotes that of the society more effectually than when he really intends to promote it."

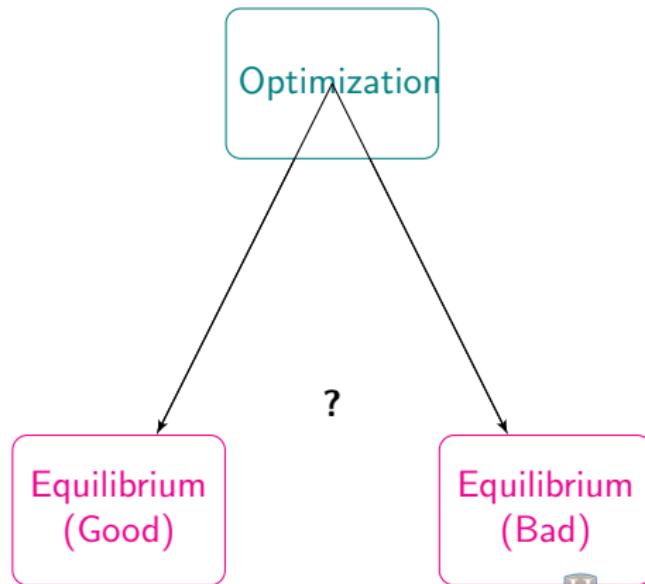
*Wealth of Nations* (1776):  
Book IV, Chapter 2.9



## Formalizing The Invisible Hand

"Though he intends only his own gain, and he is in this, as in many other cases, led by an invisible hand to promote an end which was no part of his intention... By pursuing his own interest he frequently promotes that of the society more effectually than when he really intends to promote it."

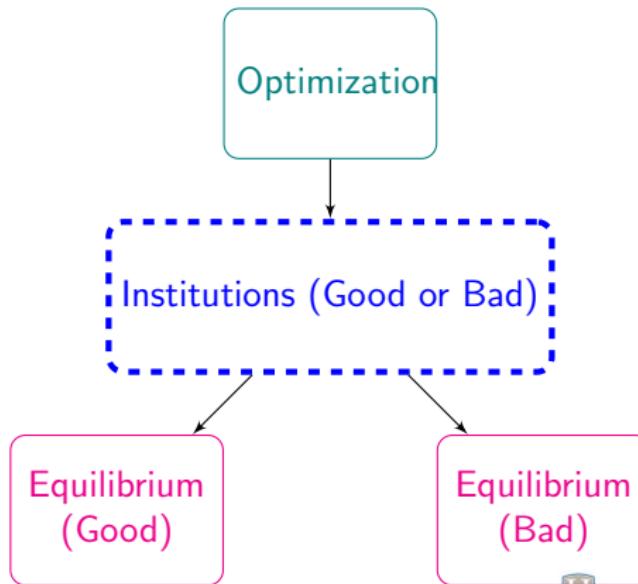
*Wealth of Nations* (1776):  
Book IV, Chapter 2.9



## Formalizing The Invisible Hand

"Though he intends only his own gain, and he is in this, as in many other cases, led by an invisible hand to promote an end which was no part of his intention... By pursuing his own interest he frequently promotes that of the society more effectually than when he really intends to promote it."

## *Wealth of Nations* (1776): Book IV, Chapter 2.9



# Three Facts About the World

- ① Individual people pursue various goals.
- ② We live in a world of scarcity.
- ③ We have a functioning, complex social order.



# The Pure Logic of Choice: Ends and Means

- Each of us acts purposefully
- We have **ends**, goals, desires, objectives, etc
- We use **means** that we believe will achieve our ends



# Methodological Individualism

- Only individual people act.
- The individual is the base unit of all economic analysis.



# The Pure Logic of Choice: Ends and Means

- Satisfying human desires is a **service**
- An object that can provide services is an **economic good** or **resource**



# The Pure Logic of Choice: Ends and Means

- Goods provide “**utility**” (satisfaction of a desire) when we **consume** them



# The Pure Logic of Choice: Ends and Means

- An **economic bad** hinders our ability to satisfy our desires



# Three Facts About the World

- ① Individual people pursue various goals.
- ② We live in a world of scarcity.
- ③ We have a functioning, complex social order.



# Scarcity

- **Scarcity:** human desires are practically unlimited, but our ability to satisfy them (with goods) are limited
- How do we best “economize” limited resources to satisfy our unlimited desires “**efficiently?**”



# The Pure Logic of Choice

- We can only pursue one goal at a time
- This implies that we must **choose** to forgo all other alternatives when we pursue each goal



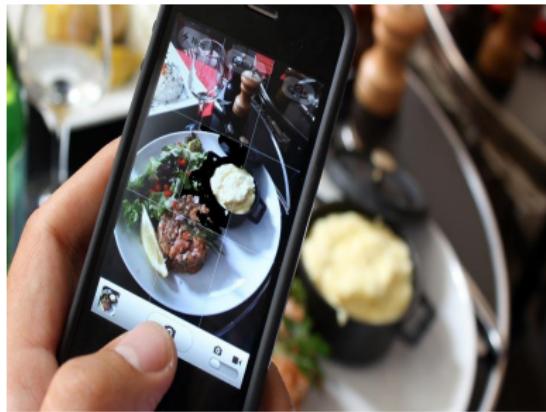
# The Pure Logic of Choice: Cost

- The **(opportunity) cost** of every choice is the next best alternative forgone
- More inclusive than “**accounting cost**”
- “You can’t have your cake and eat it too”



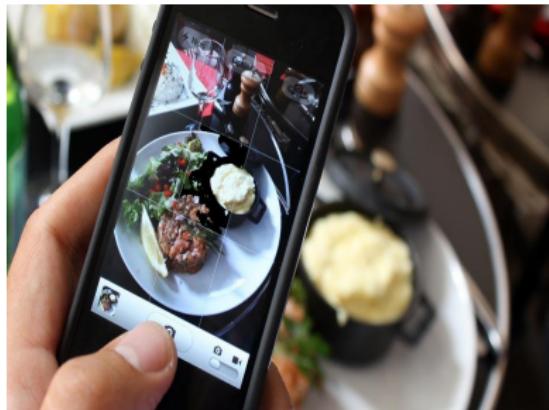
# The Pure Logic of Choice: Cost

- The **(opportunity) cost** of every choice is the next best alternative forgone
- More inclusive than “**accounting cost**”
- “You can’t have your cake and eat it too”



# The Pure Logic of Choice: Cost

- The **(opportunity) cost** of every choice is the next best alternative forgone
- More inclusive than “**accounting cost**”
- “You can’t have your cake and eat it too”



# Accounting vs. Economic (Opportunity) Cost

## **Accounting Cost      Economic Cost**

---

# Accounting vs. Economic (Opportunity) Cost

---

Accounting Cost	Economic Cost
-\$5.99	

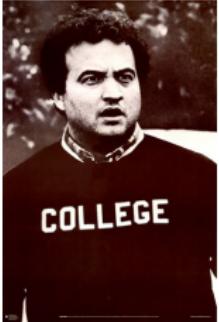


# Accounting vs. Economic (Opportunity) Cost

Accounting Cost	Economic Cost
-\$5.99	Buying soup & salad; putting money in a bank account; etc.



# Accounting vs. Economic (Opportunity) Cost

Accounting Cost	Economic Cost
 -\$5.99	Buying soup & salad; putting money in a bank account; etc.
 -\$120,000	

# Accounting vs. Economic (Opportunity) Cost

<b>Accounting Cost</b>	<b>Economic Cost</b>
 -\$5.99	Buying soup & salad; putting money in a bank account; etc.
 -\$120,000	Working for 4 years earning \$40,000/year, +\$160,000



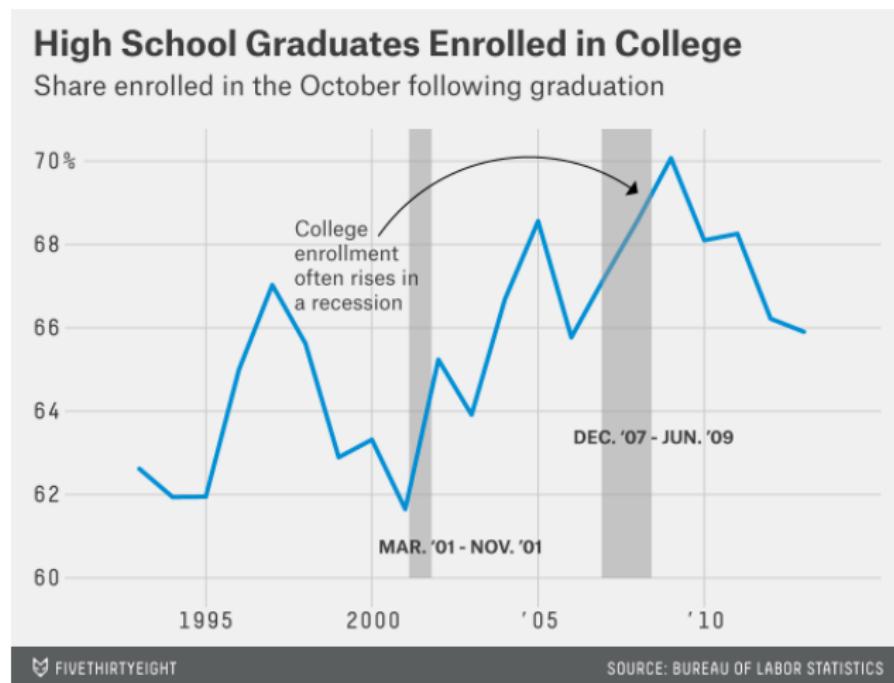
# Accounting vs. Economic (Opportunity) Cost

- What would happen during a recession?



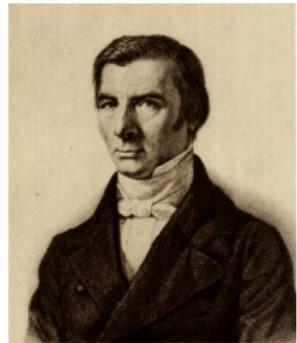
# Accounting vs. Economic (Opportunity) Cost

- What would happen during a recession?



# Opportunity Cost – Seen and Unseen

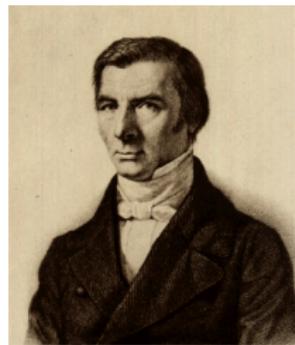
- The Parable of the Broken Window



Frederic Bastiat  
(1801-1850)  
*What Is Seen and  
What is Not Seen*  
(1848)

# Opportunity Cost – Seen and Unseen

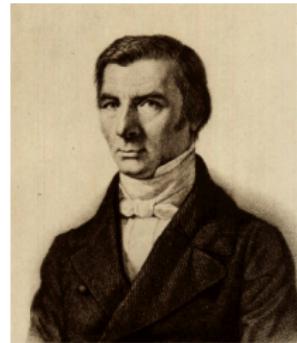
- The Parable of the Broken Window
- “That which is seen”



Frederic Bastiat  
(1801-1850)  
*What Is Seen and  
What is Not Seen*  
(1848)

# Opportunity Cost – Seen and Unseen

- The Parable of the Broken Window
- “That which is seen”
  - The broken window, resources diverted to glassmaking

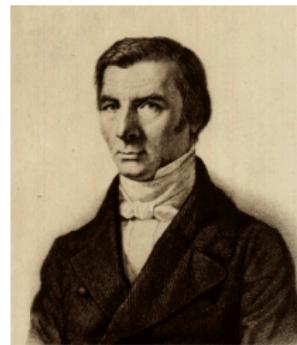


Frederic Bastiat  
(1801-1850)

*What Is Seen and  
What is Not Seen*  
(1848)

# Opportunity Cost – Seen and Unseen

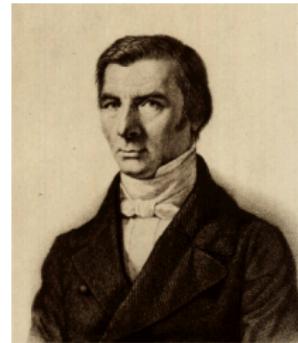
- The Parable of the Broken Window
- “That which is seen”
  - The broken window, resources diverted to glassmaking
- “That which is unseen”



Frederic Bastiat  
(1801-1850)  
*What Is Seen and  
What is Not Seen*  
(1848)

# Opportunity Cost – Seen and Unseen

- The Parable of the Broken Window
- “That which is seen”
  - The broken window, resources diverted to glassmaking
- “That which is unseen”
  - The opportunity cost
  - Resources diverted from elsewhere

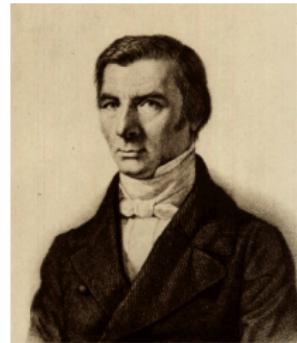


Frederic Bastiat  
(1801-1850)  
*What Is Seen and  
What is Not Seen*  
(1848)



# Opportunity Cost – Seen and Unseen

- In a complex world, all actions/policies have unintended consequences!
- Economics must examine all intended and *unintended* consequences



Frederic Bastiat  
(1801-1850)

*What Is Seen and  
What is Not Seen*  
(1848)

# Opportunity Cost – Seen and Unseen



ARTICLES EVENTS RESOURCES COURSES STORE

Policy Uber Lyft Ridesharing Regulation Austin Alcohol

## Without Uber or Lyft, Austin Experiences Skyrocketing DUI Rates

Brittany Hunter  
Wednesday, January 04, 2017

f t g+ in d田

FEE (January 4, 2017): "Without Uber or Lyft, Austin Experiences Skyrocketing DUI Rates"

# Opportunity Cost – Seen and Unseen

FUTURE TENSE THE CITIZEN'S GUIDE TO THE FUTURE. | DEC. 30 2016 5:56 AM  
FROM SLATE, NEW AMERICA, AND ASU

Slate



## Self-Driving Cars Will Make Organ Shortages Even Worse

We need to prepare for that now.

By Ian Adams and Anne Hobson



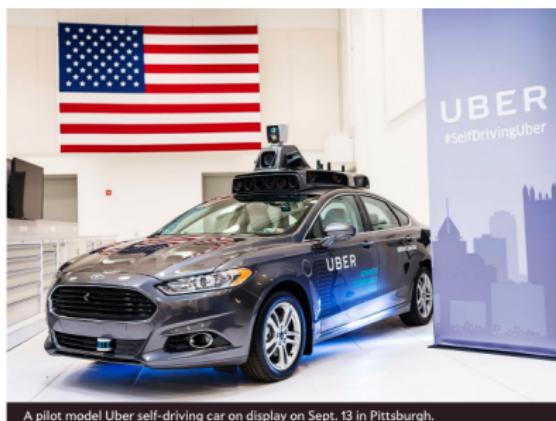
23.2k 1.9k 509



1.9k



509



A pilot model Uber self-driving car on display on Sept. 13 in Pittsburgh.

Slate (December 30, 2016): “Self-Driving Cars Will Make Organ Shortages Even Worse”



# Opportunity Cost – Seen and Unseen

- What does it mean to say that spending money “stimulates” “the economy?”
  - Scarce resources used in one industry can not be used in other industries
  - Every (visible) decision to spend on X gets you more X, and destroys an (invisible) opportunity to spend on Y



# Opportunity Costs and Sunk Costs

- Opportunity costs are *forward-looking*
- Prior choices with *nonrecoverable* costs that were incurred are **sunk costs**



# Opportunity Costs and Sunk Costs

- Opportunity costs are *forward-looking*
- Prior choices with *nonrecoverable* costs that were incurred are **sunk costs**
  - Sunk costs should not enter into rational future decisions



# Opportunity Costs and Sunk Costs

- Opportunity costs are *forward-looking*
- Prior choices with *nonrecoverable* costs that were incurred are **sunk costs**
  - Sunk costs should not enter into rational future decisions
  - But often they do, we are behaviorally primed by the **sunk cost fallacy**



# Opportunity Costs and Sunk Costs



# Opportunity Costs and Sunk Costs



# Opportunity Costs and Sunk Costs



# A Theory of Value

- Where do goods get their value?



# A Theory of Value: Classical Economists (1770s–1870s)

- “Natural” prices of goods are determined *objectively* by their cost of production (wages + rents + profits)
  - Ricardo & Marx: Labor theory of value – value of goods determined by number of “labor hours” making it



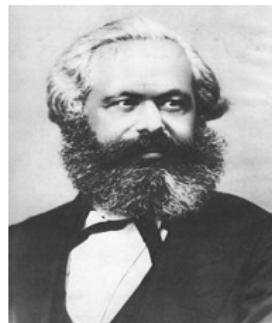
Adam Smith  
(1723-1790)



David Hume  
(1711-1776)



David Ricardo  
(1772-1823)



Karl Marx  
(1818-1883)

# The Classical Diamond-Water/Value Paradox

- Why is the price of water much lower than the price of diamonds?



# The Marginalist Revolution



William S. Jevons  
(1835-1882)  
*The Theory of  
Political Economy* (1871)



Carl Menger  
(1840-1921)  
*Principles of Economics*  
(1871)



Leon Walras  
(1834-1921)  
*Elements of Pure  
Economics* (1874)

# Marginalist Theory of Value

- All human choices are made “on the margin” (considering a one-time, discrete unit of a particular good)
- Each unit of a good provides **marginal utility**
- Marginal utility can be affected by many factors



# The Marginalist Revolution

"Value is thus nothing inherent in goods, no property of them, nor an independent thing existing by itself. It is a judgment economizing men make about the importance of the goods at their disposal for the maintenance of their lives and well-being. Hence, value does not exist outside the consciousness of men."

*Principles of Economics* (1871): 120-121



Carl Menger  
(1840-1921)

# Value is Subjective

- Each of us has our own preferences and values that guide our ends
- Preferences are given, subjective, and non-comparable across people



# Value and the Margin

- Value is *ordinal*, a ranking of goals
- We pursue our highest-valued (highest marginal utility) goals first



# Value and the Margin

**The Law of Diminishing Marginal Utility:** each marginal unit of a good consumed, all else equal, tends to provide less marginal utility than the previous unit



# Value and the Margin

- Suppose you have 5 gallons of water, and have ranked 5 uses for water by their value to you, each use requiring 1 gallon:
  - 1 Drink water
  - 2 Take a shower
  - 3 Wash car
  - 4 Water plants
  - 5 Change goldfish water



# Value and the Margin

- Suppose you have 5 gallons of water, and have ranked 5 uses for water by their value to you, each use requiring 1 gallon:
  - ① Drink water
  - ② Take a shower
  - ③ Wash car
  - ④ Water plants
  - ⑤ Change goldfish water
- Now suppose you have *lost* one gallon of water. Which activity will you *no longer* use water for?



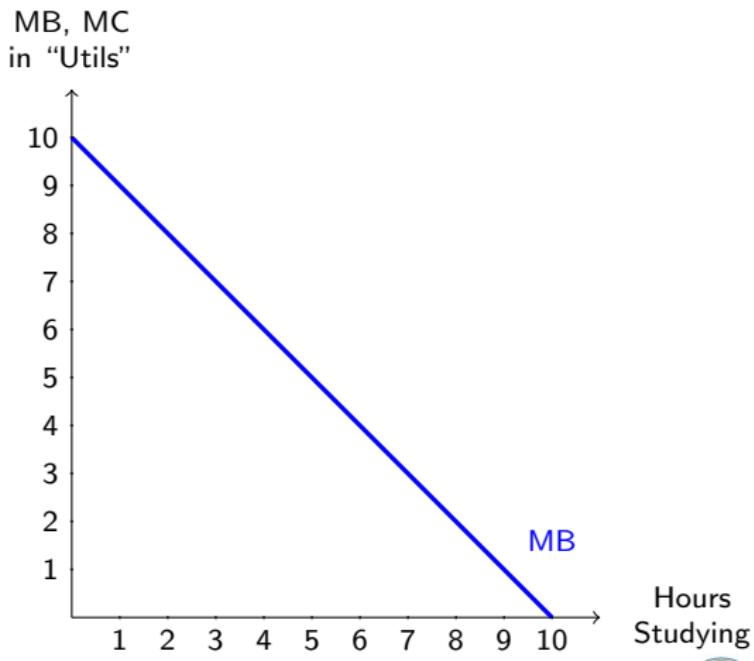
# The Equimarginal Principle

Suppose you have 10 free hours to allocate between studying or playing:



# The Equimarginal Principle

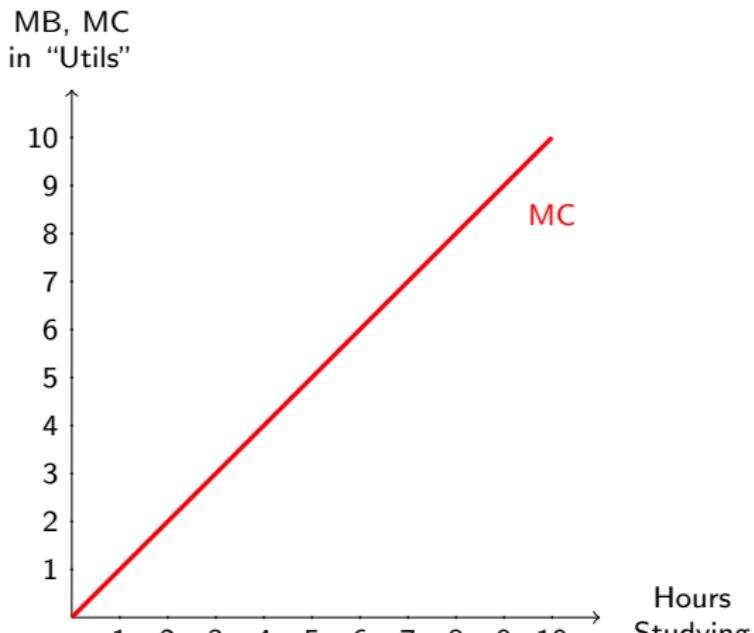
- **Marginal Benefit:**  
The benefit gained  
from obtaining  
more unit of a good



HOOD  
COLLEGE

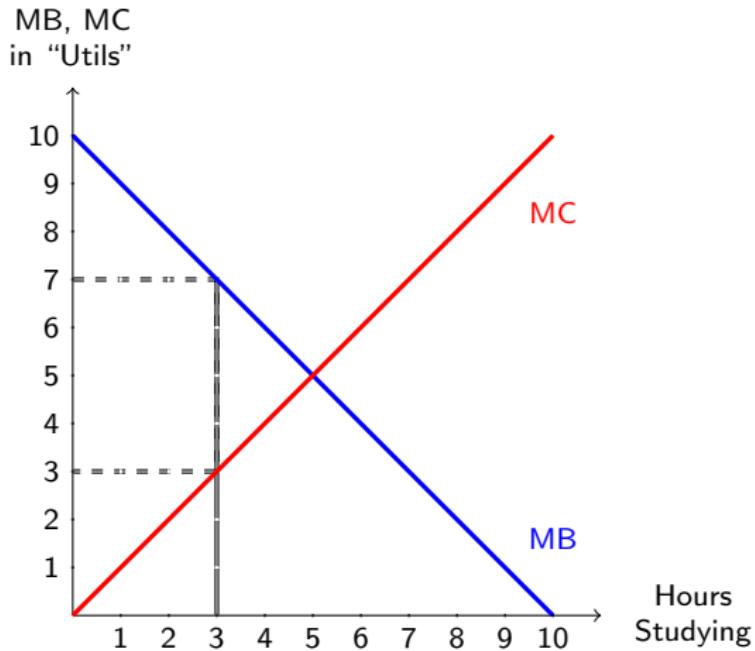
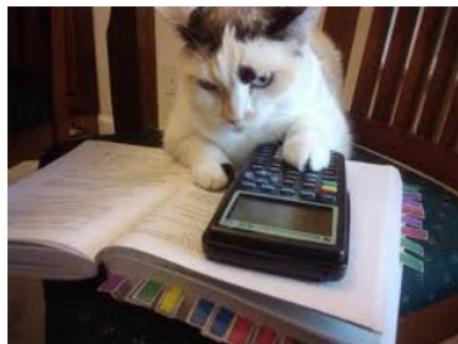
# The Equimarginal Principle

- **Marginal Cost:** The (opportunity) cost incurred from obtaining one more unit of a good



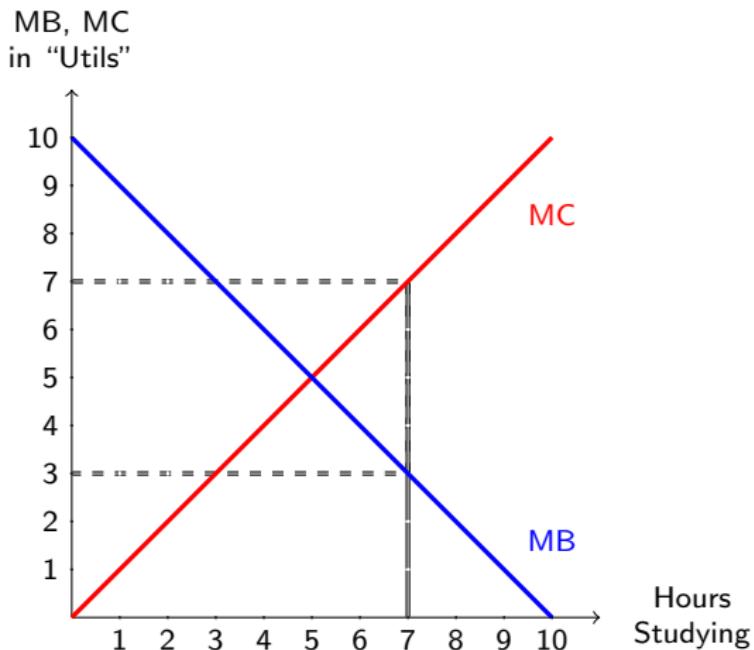
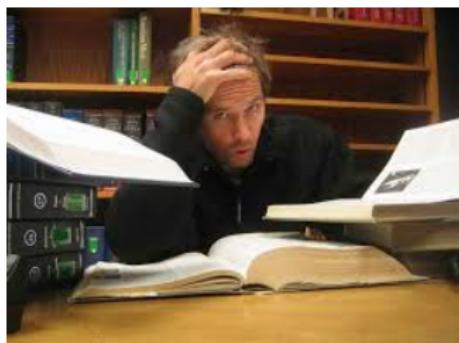
# The Equimarginal Principle

- When  $MB > MC$ :  
Do more!
  - e.g. @ 3 hours  
of studying



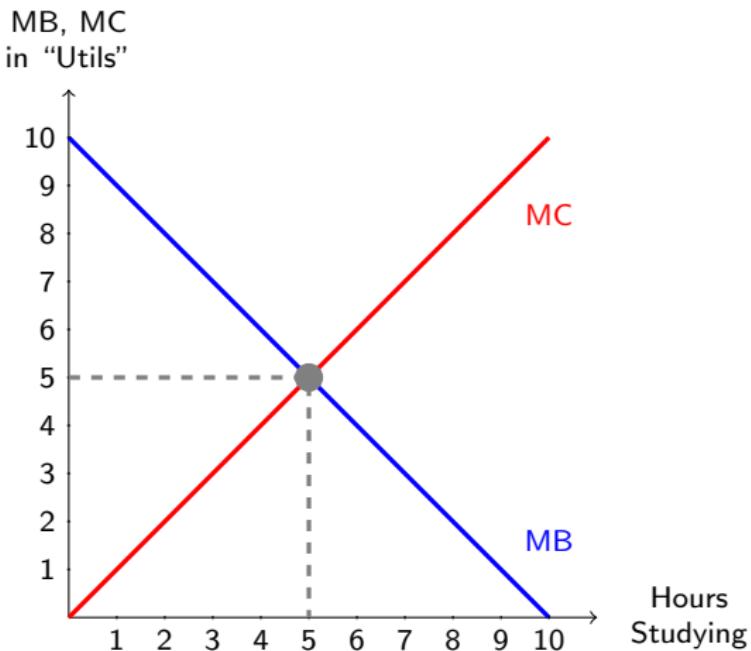
## The Equimarginal Principle

- When  $MB < MC$ :  
Do less!
    - e.g. @ 7 hours  
of studying



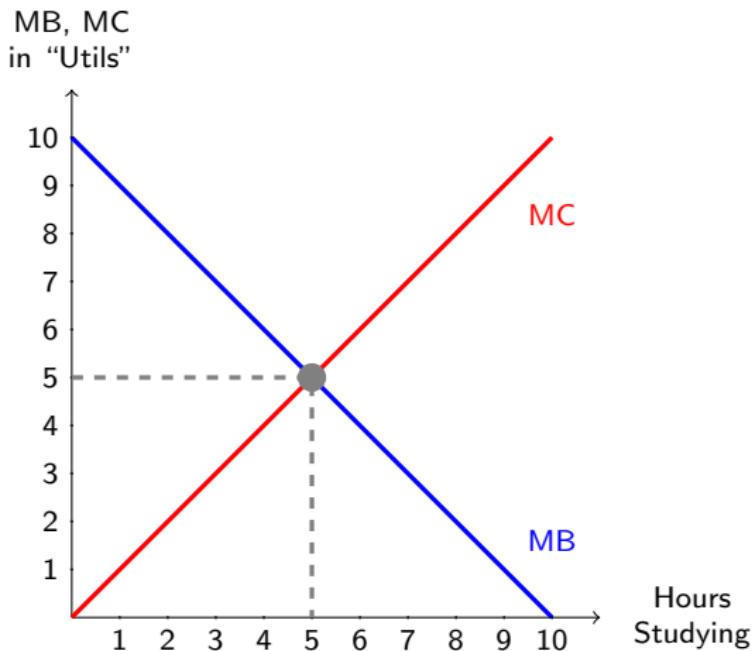
# The Equimarginal Principle

- When  $MB = MC$ : Optimum!



# The Equimarginal Principle

- When  $MB = MC$ : Optimum!
- At 5 hours and 5 hours, there is no alternative arrangement that can provide more value!



# The Equimarginal Principle

- **The Equimarginal Principle:** a systemic tendency for people to act to the point where all marginal benefits from different actions equalize



# The Equimarginal Principle

- The Equimarginal Principle: a systemic tendency for people to act to the point where all marginal benefits from different actions equalize
- An optimal decision to allocate resources among competing actions occurs when **marginal costs** of an activity its equal **marginal benefits** – “**cost-benefit analysis**”



# The Equimarginal Principle

- The Equimarginal Principle: a systemic tendency for people to act to the point where all marginal benefits from different actions equalize
- An optimal decision to allocate resources among competing actions occurs when **marginal costs** of an activity its equal **marginal benefits** – “**cost-benefit analysis**”
- If this is not true, it's not an optimum! There would be a reallocation of your resources that would add value!



# The Equimarginal Principle



# The Equimarginal Principle



# Three Facts About the World

- ① Individual people pursue various goals.
- ② We live in a world of scarcity.
- ③ We have a functioning, complex social order.



# Competition

- People **compete** for use of goods
- How do we allocate our scarce goods among conflicting plans?



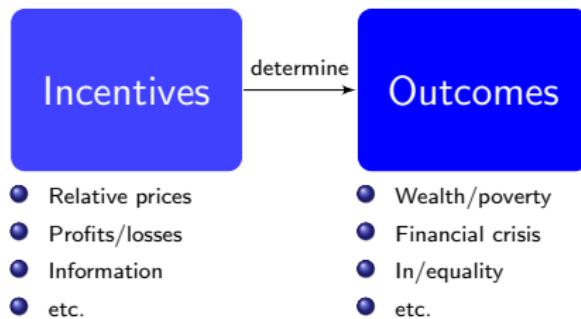
# A Logical Structure of Political Economy

## Outcomes

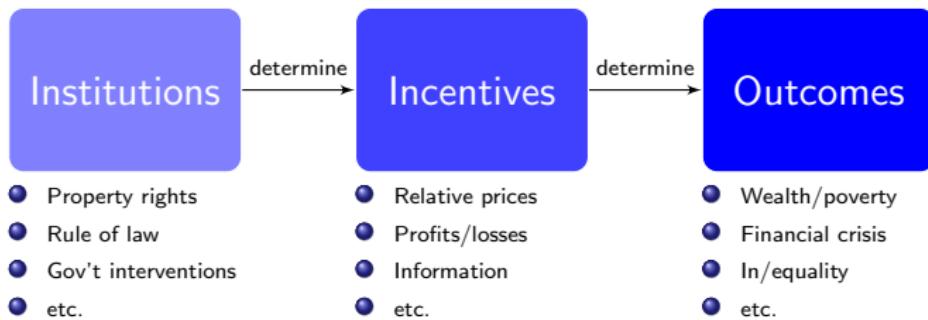
- Wealth/poverty
- Financial crisis
- In/equality
- etc.



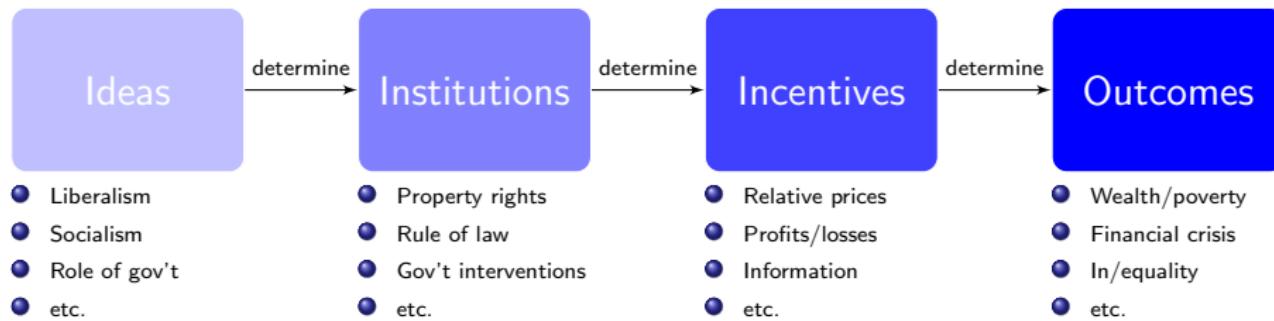
# A Logical Structure of Political Economy



# A Logical Structure of Political Economy



# A Logical Structure of Political Economy



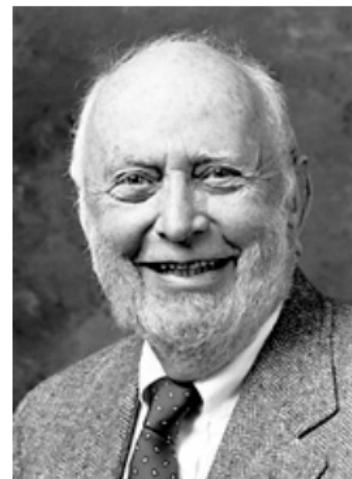
# Incentives Are Structured By Institutions

“Institutions are the humanly devised constraints that structure political economic and social interaction. They consist of both informal constraints (sanctions, taboos, customs, traditions, and codes of conduct), and formal rules (constitutions, laws, property rights)”

1991, “Institutions,” *Journal of Economic Perspectives* 5(1): 10

“Institutions are the rules of the game in a society.”

1990, *Institutions, Institutional Performance, and Economic Performance*,  
p. 3



Douglass C. North  
(1920-2015)  
Nobel Laureate (1993)

# Incentives Are Structured By Institutions



# Incentives Are Structured By Institutions



- “Who needs this nail?”

# Incentives Are Structured By Institutions



- “Who needs this nail?”
- “Nobody, but the main thing is that we filled our quota!”

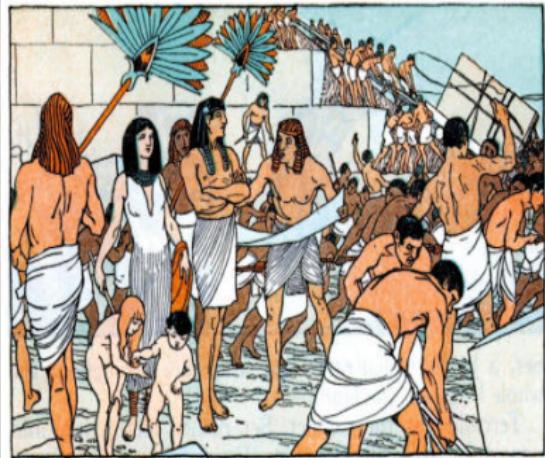
## The Price Mechanism

- Goods flow to those who value them the highest
  - Individuals bid away goods based on their willingness and ability to forgo other alternatives to acquire them



# Three Facts About the World

For 1000s of years, the *elite* could become wealthy only by this...



# Three Facts About the World

But now, the *average person* can become wealthy by this...



# Division of Labor

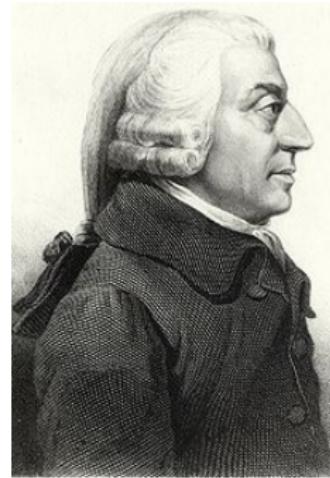
- Output performed under the **division of labor** exceeds output performed in isolation



# Division of Labor

"The greatest improvement in the productive powers of labour, and the greater part of the skill, dexterity, and judgment with which it is any where directed, or applied, seem to have been the effects of the **division of labour.**"

Book I, Chapter 1

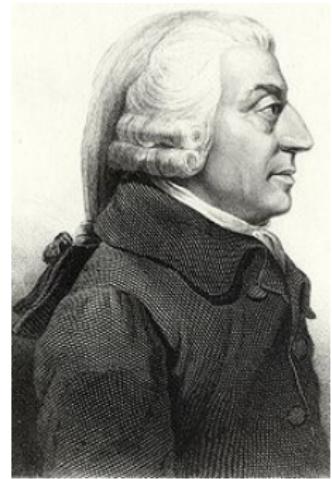


Adam Smith  
(1723-1790)

# Division of Labor

"It is but a very small part of a man's wants which the produce of his own labour can supply. He supplies the far greater part of them by exchanging that surplus part of the produce of his own labour, which is over and above his own consumption, for such parts of the produce of other men's labour as he has occasion for. Every man thus lives by exchanging, or becomes in some measure a merchant, and the society itself grows to be what is properly a commercial society."

Book I, Chapter 4



Adam Smith  
(1723-1790)

# Division of Labor

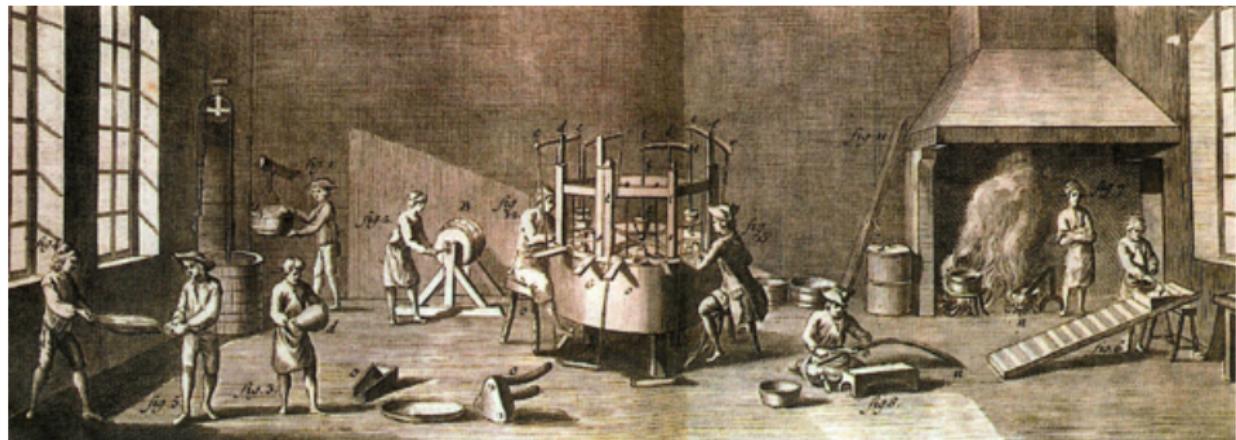
To take an example...from a very trifling manufacture...the trade of the pin-maker. [I]n the way in which this business is now carried on, not only the whole work is a peculiar trade, but it is divided into a number of branches, of which the greater part are likewise peculiar trades. One man draws out the wire, another straightens it, a third cuts it, a fourth points it, a fifth grinds it at the top for receiving the head...and the important business of making a pin is, in this manner, divided into about eighteen distinct operations...Ten men only were employed [and they] could make among them upwards of forty-eight thousand pins in a day...But if they had all wrought separately and independently [they] certainly could not each of them have made twenty, perhaps not one pin in a day...

(1776). *Wealth of Nations* Book I, Chapter 1



Adam Smith  
(1723-1790)

# Division of Labor



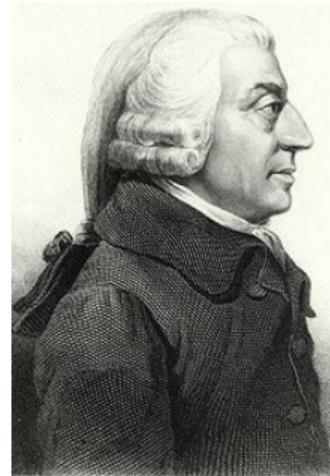
Adam Smith's Pin Factory Illustration



# Division of Labor

"As it is the power of exchanging that gives occasion to the division of labour, so **the extent of this division must always be limited by...the extent of the market.** When the market is very small, no person can have any encouragement to dedicate himself entirely to one employment, for want of the power to exchange all that surplus part of the produce of his own labour, which is over and above his own consumption, for such parts of the produce of other men's labour as he has occasion for."

(1776). *Wealth of Nations* Book I, Chapter 3



Adam Smith  
(1723-1790)

# Division of Labor

- Division of Labor: People specialize in production and exchange their produce with others to acquire all their other desired goods



# Division of Labor

- Division of Labor: People **specialize** in production and **exchange** their produce with others to acquire all their other desired goods
- Another sense: dividing up production into multiple tasks & having workers (or firms!) specialize in those tasks improves productivity



# Division of Labor

- The amount of specialization (number of separate tasks) is determined by the size of the market!



# Division of Labor

- The amount of specialization (number of separate tasks) is determined by the size of the market!
- With larger markets, increases opportunities to specialize & trade



# Division of Labor

- The amount of specialization (number of separate tasks) is determined by the size of the market!
- With larger markets, increases opportunities to specialize & trade
- Makes large-scale investment & innovation lower-cost!



# Division of Labor and Division of Knowledge

- With greater extent of the market comes greater division of labor, and also a greater specialization and **division of knowledge**



# Division of Labor and Division of Knowledge

- With greater extent of the market comes greater division of labor, and also a greater specialization and **division of knowledge**



# Division of Labor, Productivity, & Employment

- 100 people with sticks



# Division of Labor, Productivity, & Employment

- 10 people with shovels



# Division of Labor, Productivity, & Employment

- 1 person with a backhoe



# Division of Labor, Productivity, & Employment

Year	U.S. Population	% of Americans Working on Farms
1790	4 million	90%



# Division of Labor, Productivity, & Employment

Year	U.S. Population	% of Americans Working on Farms
1790	4 million	90%
1900	76 million	40%



# Division of Labor, Productivity, & Employment

Year	U.S. Population	% of Americans Working on Farms
1790	4 million	90%
1900	76 million	40%
2015	326 million	<3%

Source



# Division of Labor and Division of Knowledge



Thomas Thwaites: How I Built a Toaster From Scratch



# Goals of This Course

- ① Develop a kit of analytical tools for understanding the world (“the economic way of thinking”)



# Goals of This Course

- ① Develop a kit of analytical tools for understanding the world (“the economic way of thinking”)
- ② Apply the economic way of thinking to current & past issues



# Goals of This Course

- ① Develop a kit of analytical tools for understanding the world (“the economic way of thinking”)
- ② Apply the economic way of thinking to current & past issues
  - Current Events assignment, Op-ed



# Goals of This Course

- ① Develop a kit of analytical tools for understanding the world (“the economic way of thinking”)
- ② Apply the economic way of thinking to current & past issues
  - Current Events assignment, Op-ed
- ③ Craft arguments and engage ideas in writing



# Goals of This Course

- ① Develop a kit of analytical tools for understanding the world (“the economic way of thinking”)
- ② Apply the economic way of thinking to current & past issues
  - Current Events assignment, Op-ed
- ③ Craft arguments and engage ideas in writing
  - Op-Ed assignment



# Goals of This Course

- ① Develop a kit of analytical tools for understanding the world (“the economic way of thinking”)
- ② Apply the economic way of thinking to current & past issues
  - Current Events assignment, Op-ed
- ③ Craft arguments and engage ideas in writing
  - Op-Ed assignment
- ④ Learn to think critically about institutions, policies, and socio-political-economic issues



# Goals of This Course

- ① Develop a kit of analytical tools for understanding the world (“the economic way of thinking”)
- ② Apply the economic way of thinking to current & past issues
  - Current Events assignment, Op-ed
- ③ Craft arguments and engage ideas in writing
  - Op-Ed assignment
- ④ Learn to think critically about institutions, policies, and socio-political-economic issues
- ⑤ Inform personal decisionmaking



# Parting Thoughts on Economics

“There are no solutions, there are only trade-offs.”

(1987). *A Conflict of Visions*



Thomas Sowell  
(1930-)

# Parting Thoughts on Economics

"The problem is that most of what a student is likely to read or hear about international economics is nonsense. [T]he most important thing to teach our undergrads about trade is how to detect that nonsense. That is, our primary mission should be to vaccinate the minds of our undergraduates against the misconceptions that are so predominant in what passes for educated discussion about international trade."

(1993). "What Do Undergrads Need to Know About Trade?" *American Economic Review* 83(2): 23-26



Paul Krugman  
(1953-)

Nobel Laureate (2008)



# Parting Thoughts on Economics

"Academic economics is primarily useful, both to the student and to the political leader, as a prophylactic against popular fallacies."

*Simons' Syllabus*

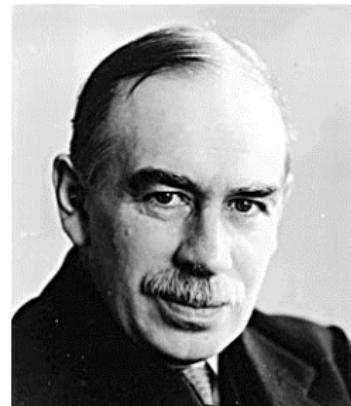


Henry Calvert Simons  
(1899-1946)

# Parting Thoughts on Economics

"The ideas of economists and political philosophers, both when they are right and when they are wrong, are more powerful than is commonly understood. Indeed the world is ruled by little else. Practical men, who believe themselves to be quite exempt from any intellectual influence, are usually the slaves of some defunct economist. Madmen in authority, who hear voices in the air, are distilling their frenzy from some academic scribbler of a few years back. I am sure that the power of vested interests is vastly exaggerated compared with the gradual encroachment of ideas."

(1936) *The General Theory of Employment, Interest, and Money*, p.383



John Maynard Keynes  
(1883-1946)

# Parting Thoughts on Economics

"The curious task of economics is to demonstrate to men how little they really know about what they imagine they can design."

(1989) *The Fatal Conceit*, p.76



Friedrich A. von Hayek  
(1899-1992)  
Nobel Laureate (1974)