3.4 — The *Dynamic* Benefits of Markets

ECON 306 • Microeconomic Analysis • Spring 2021

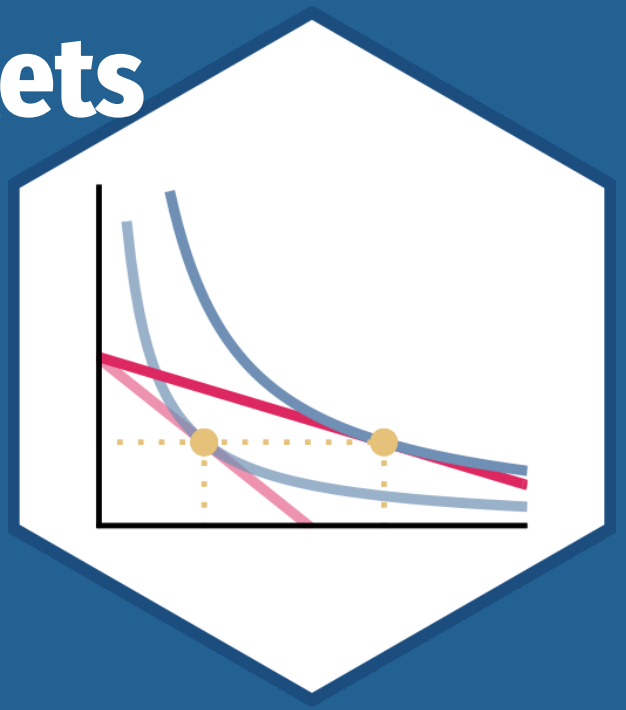
Ryan Safner

Assistant Professor of Economics

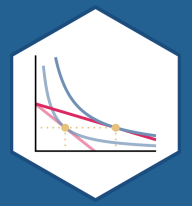
safner@hood.edu

ryansafner/microS21

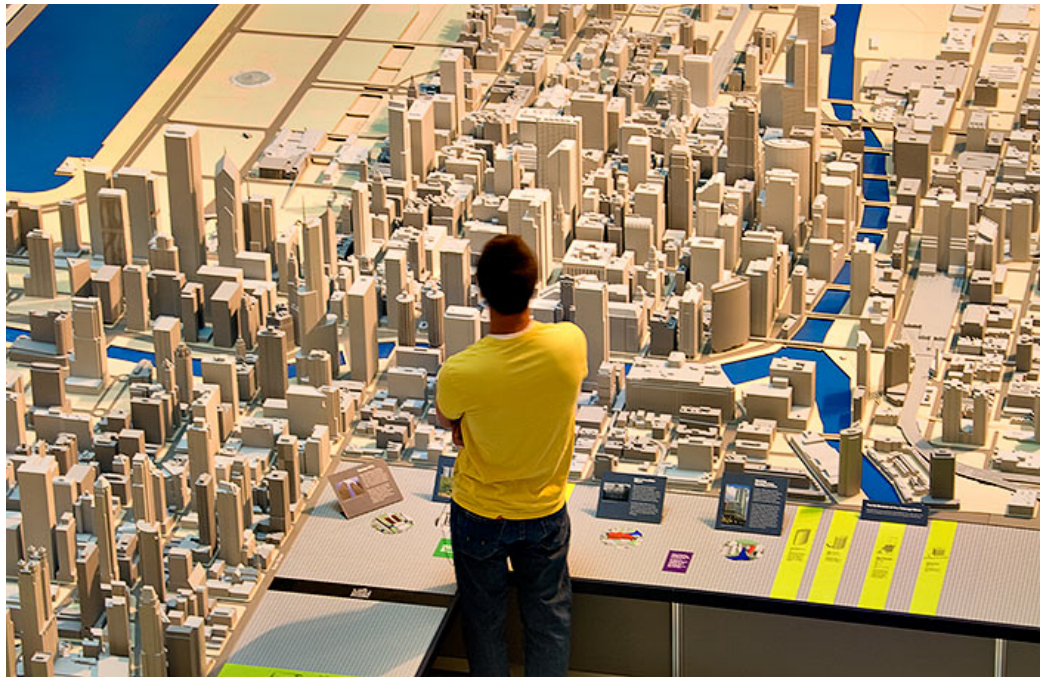
microS21.classes.ryansafner.com



Outline



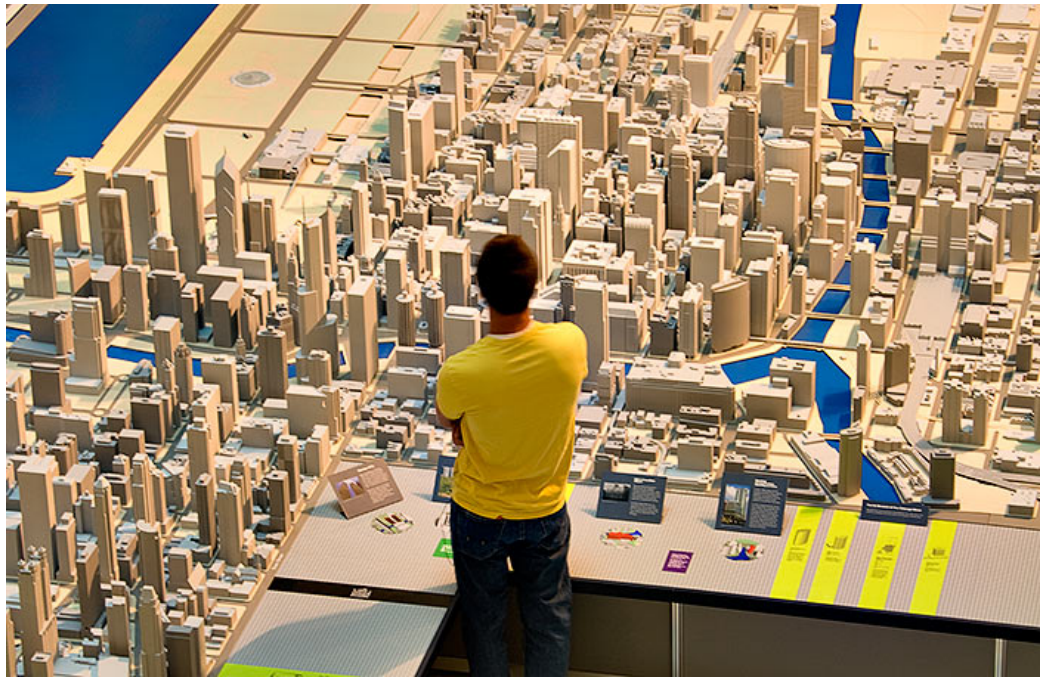
The Model is Not the Reality I



- This course is about economic modeling and formal theory
- Applications in ECON electives
- Models help us *understand* reality, but they *are not* reality!
    - Don't mistake the map for the territory itself

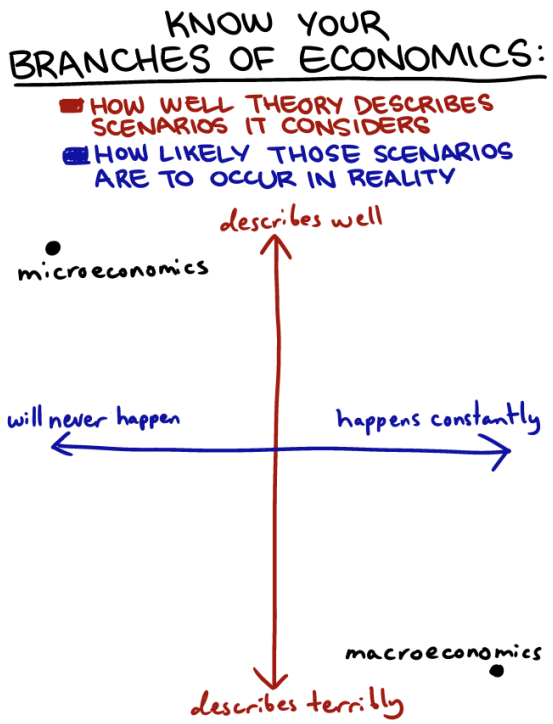
> *"All models are wrong. Some are useful"* - George Box

The Model is Not the Reality II



- Our models so far have given us interesting results:
    - Markets reach equilibrium
    - Economic profits are zero in the long run in competitive markets
- Both are **fictional**
- But the models **still** show us useful insights about how a market economy works
- Some readings in today's readings page to help you understand

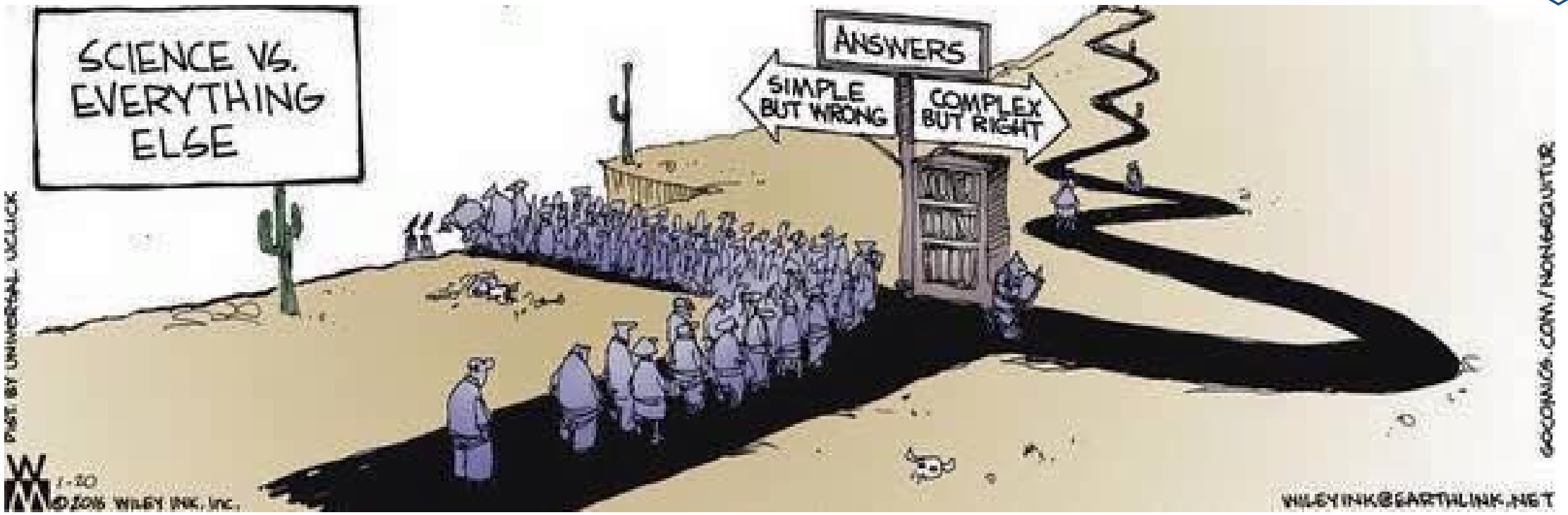
The Model is Not the Reality III

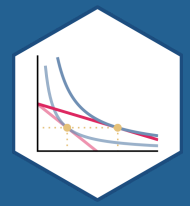


Source: SMBC

“Shame on the three of you who enjoyed this joke”

The Model is Not the Reality III

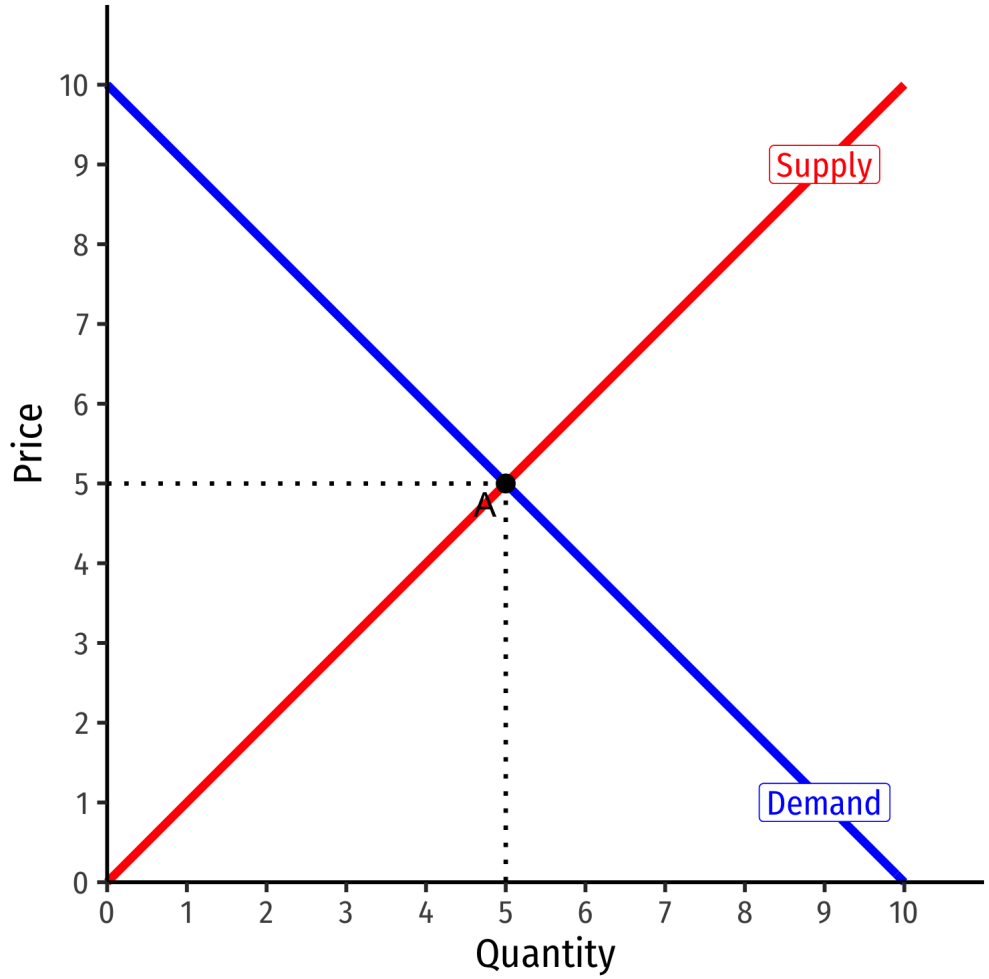




Why Markets Tend to Equilibrate, Redux

The Law of One Price I

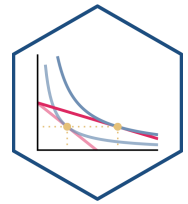
- **Law of One Price**: *all* units of the *same* good exchanged on the market will tend to have the same market price (the market-clearing price, p^*)



The Law of One Price II

- Consider if there are *multiple* different prices for *same* good:
- **Arbitrage** opportunities: optimizing individuals recognize **profit opportunity**:
  - Buy at low price, resell at high price!
  - There are possible gains from trade or gains from innovation to be had
- **Entrepreneurship**: recognizing profit opportunities and entering a market as a seller to try to capture gains from trade/innovation

Arbitrage and Entrepreneurship I



Arbitrage and Entrepreneurship II

Arbitrage and Entrepreneurship III

Uncertainty vs. Risk

Uncertainty vs. Risk

- **“Known knowns”**: perfect information
- **“Known unknowns”**: risk
  - We know the probability distribution of states that *could* happen
  - We just don't know *which* state will be realized
  - We can estimate probabilities, maximize expected value, minimize variance, etc.

Uncertainty vs. Risk

- **“Unknown unknowns”**: uncertainty
  - We don’t even know the probability distribution of states that *could* happen
  - *No model to optimize* in a world of uncertainty!

The Role of Entrepreneurial Judgment

- Under true **uncertainty**, it's not that we can't assign probabilities to each outcome; we do not even have the knowledge necessary to list all possible outcomes!

- Requires **entrepreneurial judgment** to *both*:

    1. estimate possible actions *and*
    2. estimate the likelihood of their success

- **Entrepreneur** is central player, earns pure profits (a residual) for *bearing uncertainty*

Entrepreneurial Judgment

Henry Ford

1863-1947

> “If I had asked people what they wanted, they would have said **faster horses**.” - Henry Ford

Entrepreneurial Judgment

> “It's really hard to design products by focus groups. A lot of times, **people don't know what they want until you show it to them**.” - Steve Jobs

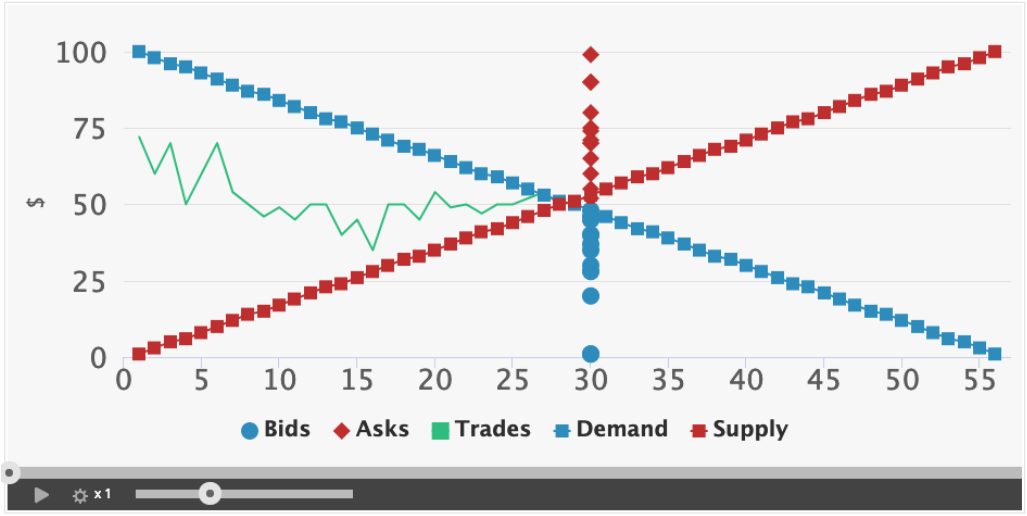
Uncertainty and Entrepreneurship

Mark Zuckerberg

1984-

> "Why were we the ones to build [Facebook]? We were just students. We had way fewer resources than big companies. If they had focused on this problem, they could have done it. The only answer I can think of is: **we just cared more**. **While some doubted** that connecting the world was actually important, **we were building**. While others doubted that this would be sustainable, **we were forming lasting connections**."

How Markets Get to Equilibrium I



STATS

TOTAL EARNINGS:	POSSIBLE EARNINGS:	EFFICIENCY
$ 1243	$ 1410	88.16%

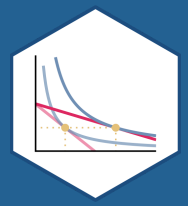
- Nobody knows "the right price" for things
- Each buyer and seller only know **their own** reservation prices
- Buyers and sellers adjust their bids/asks
- Markets do not *start* competitive, but *become* competitive!
- New entrepreneurs enter to try to capture gains from trade/innovation
- As these gains are exhausted, prices converge to equilibrium

How Markets Get to Equilibrium II

- Errors and imperfect information $\Longrightarrow$ multiple prices
  - $\Longrightarrow$ arbitrage opportunities $\Longrightarrow$ entrepreneurship
  - $\Longrightarrow$ correcting mistakes $\Longrightarrow$ people update their behavior & expectations
- Markets are **discovery processes** that *discover* the right prices, the optimal uses of resources, and cheapest production methods, none of which can be known in advance!

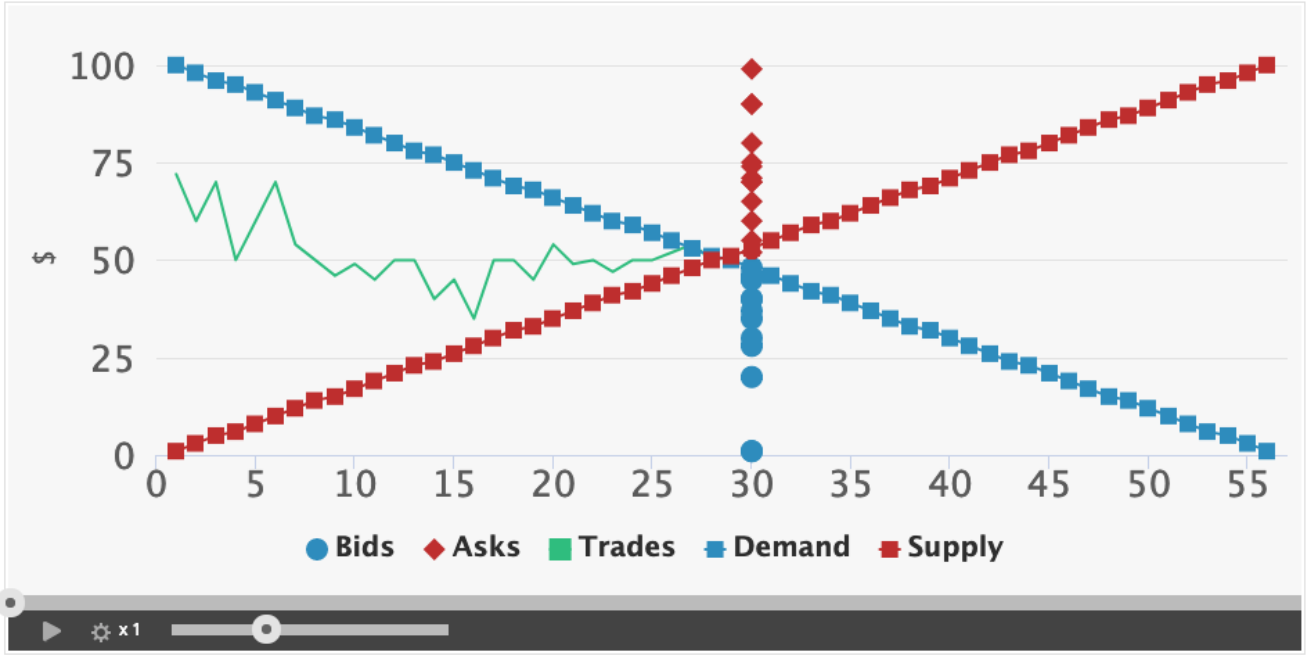
How Markets Get to Equilibrium III

- Economy as a cat-and-mouse game between:
  - **Mouse**: preferences, technologies, alternative uses of resources
  - **Cat**: market prices, least-cost technologies
- Cat always chasing mouse
  - Mouse *always* moving
  - Any time cat hasn't caught mouse: profit opportunities
- **IF** mouse *froze*, market would rest at equilibrium



The Social Functions of Market Prices

Prices are Signals I



STATS

TOTAL EARNINGS:	POSSIBLE EARNINGS:	EFFICIENCY
$ 1243	$ 1410	88.16%

Prices are Signals II

- **Markets are social *processes* that generate information via prices**
- **Prices are never "given"**, prices **emerge** dynamically from negotiation and market decisions of entrepreneurs and consumers
- **Competition**: is a **discovery process** which *discovers* what consumer preferences are and what technologies are lowest cost, and how to allocate resources accordingly

The Social Functions of Prices I

A relatively high price:

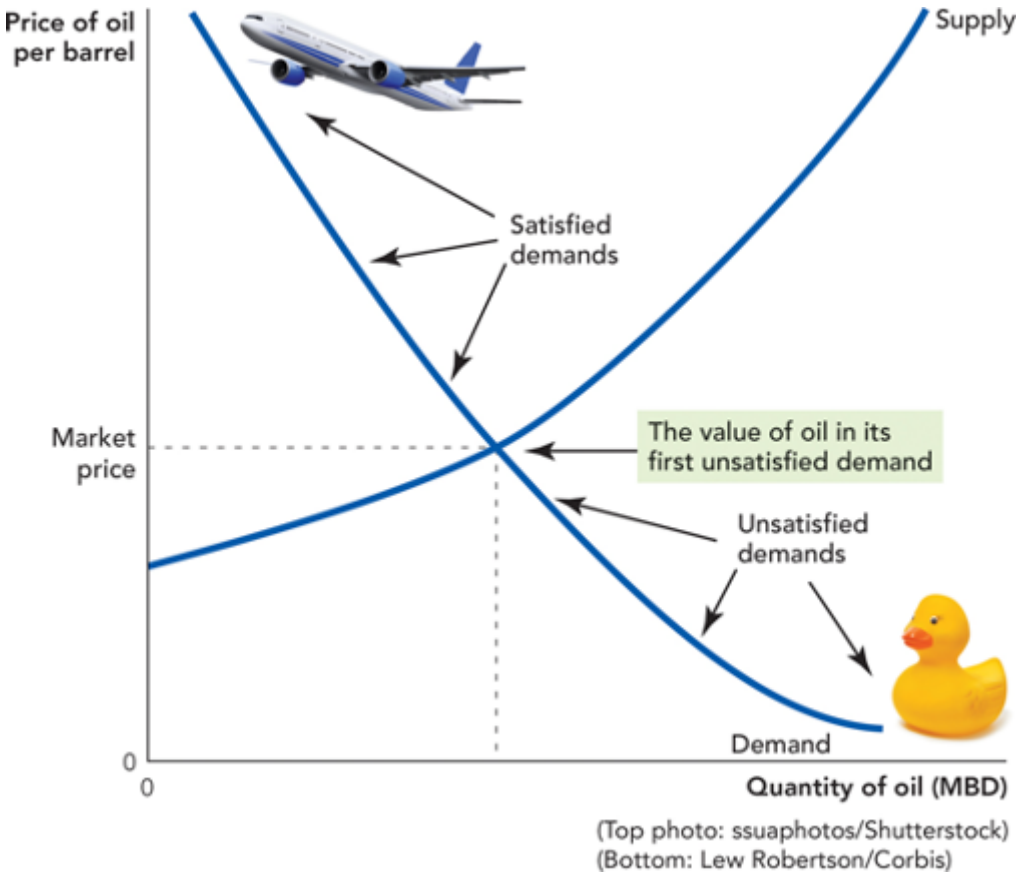
- **Conveys information**: good is relatively scarce
- **Creates incentives for**:
  - **Buyers**: conserve use of this good, seek substitutes
  - **Sellers**: produce more of this good
  - **Entrepreneurs**: find substitutes and innovations to satisfy this unmet need

The Social Functions of Prices II

A relatively low price

- **Conveys information**: good is relatively abundant
- **Creates incentives for**:
  - **Buyers**: substitute away from expensive goods towards this good
  - **Sellers**: Produce less of this good, talents better served elsewhere
  - **Entrepreneurs**: talents better served elsewhere: find more severe unmet needs

The Social Functions of Prices III

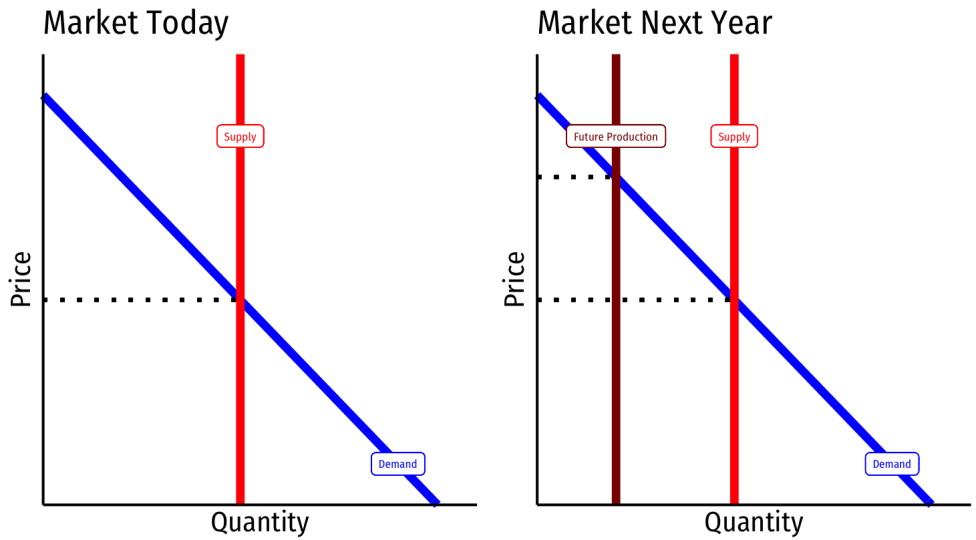


(Top photo: ssuaphotos/Shutterstock)
(Bottom: Lew Robertson/Corbis)

- **Prices tell us how to allocate scarce resources among competing uses**
- Think of diminishing marginal utility:
  - allocate scarce good to highest-valued use first
  - as supply becomes more plentiful (price falls), can allocate more units of the good to lower-valued uses (higher-valued uses already satisfied)

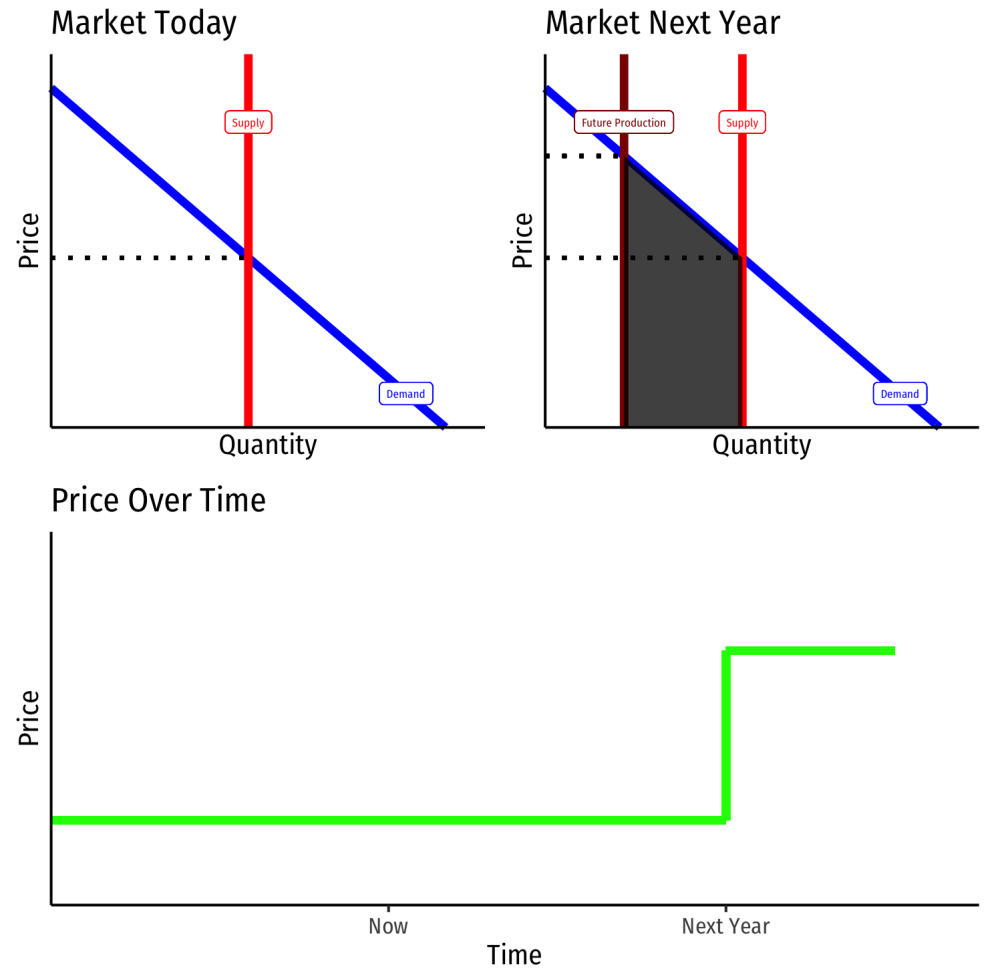
Knowledge, “Speculation,” and Prices

- Suppose (oil) producers believe there is going to be a shortage (of oil) in a year



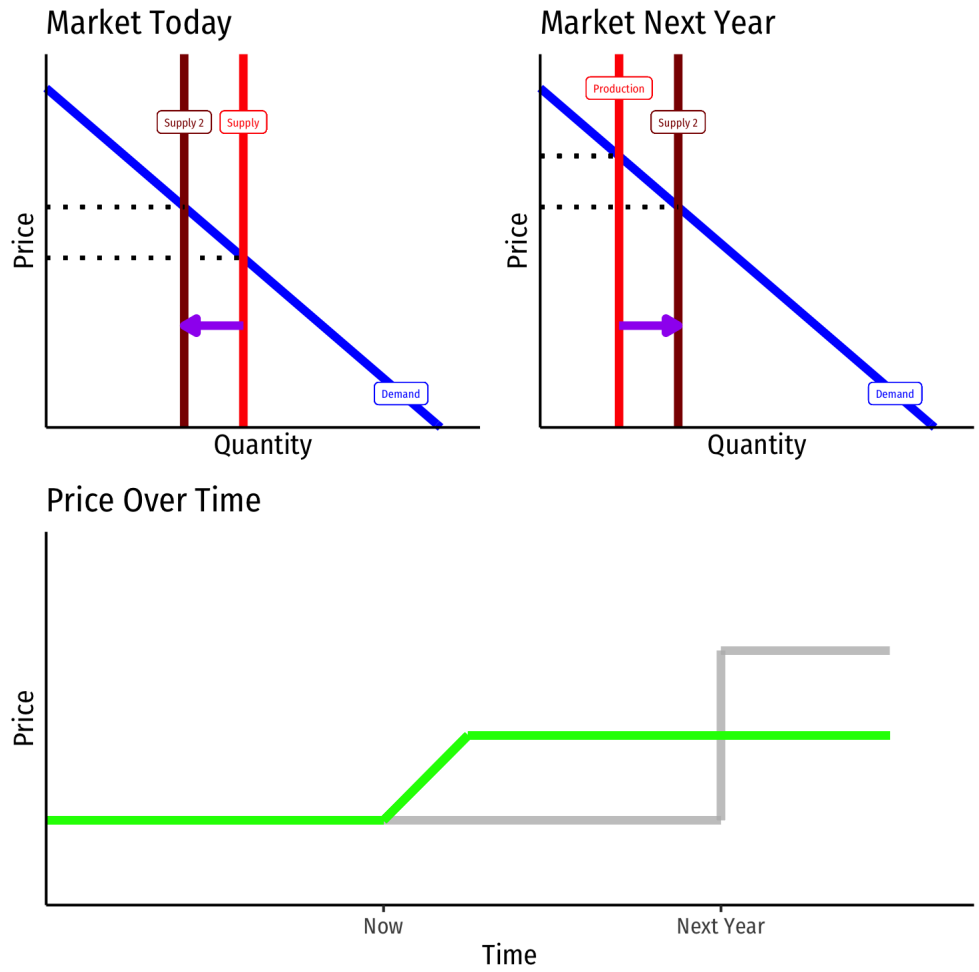
Knowledge, "Speculation," and Prices

- Suppose (oil) producers believe there is going to be a shortage (of oil) in a year
- Suppose they do nothing
- In the future, a sudden spike in price
  - Demand is inelastic to sudden changes, consumers can't adjust on the fly
  - A lot of lost economic surplus (shaded)



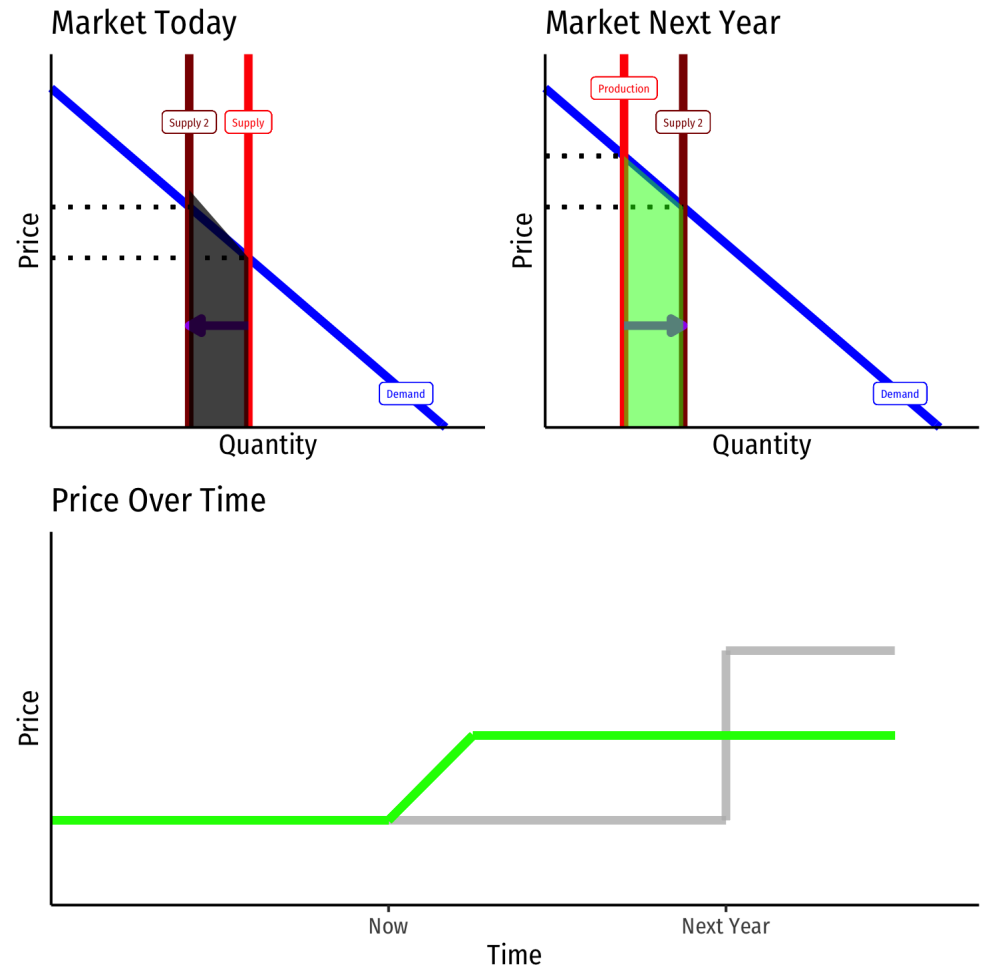
Knowledge, "Speculation," and Prices

- Suppose (oil) producers believe there is going to be a shortage (of oil) in a year
- Suppose instead they **speculate**, and try to profit from the future price change
    - TODAY: put some inventory **into storage** (take off market)
    - FUTURE: when price is higher, sell more **from inventories**



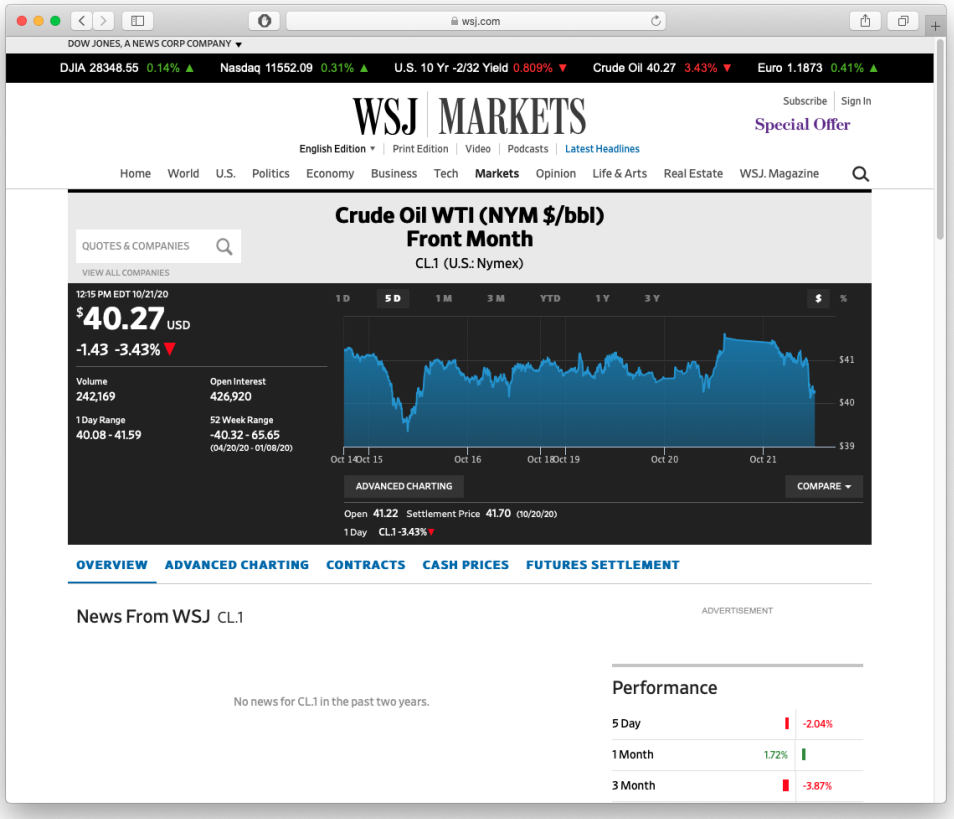
Knowledge, "Speculation," and Prices

- Suppose (oil) producers believe there is going to be a shortage (of oil) in a year
- Suppose instead they **speculate**, and try to profit from the future price change
    - TODAY: put some inventory **into storage** (take off market)
    - FUTURE: when price is higher, sell more **from inventories**
- **Price-smoothing** over time
    - Small loss in the present (gray shaded), larger gain in the future (green shaded)
    - Allows consumers to adjust their plans more over time (more elastic demand)

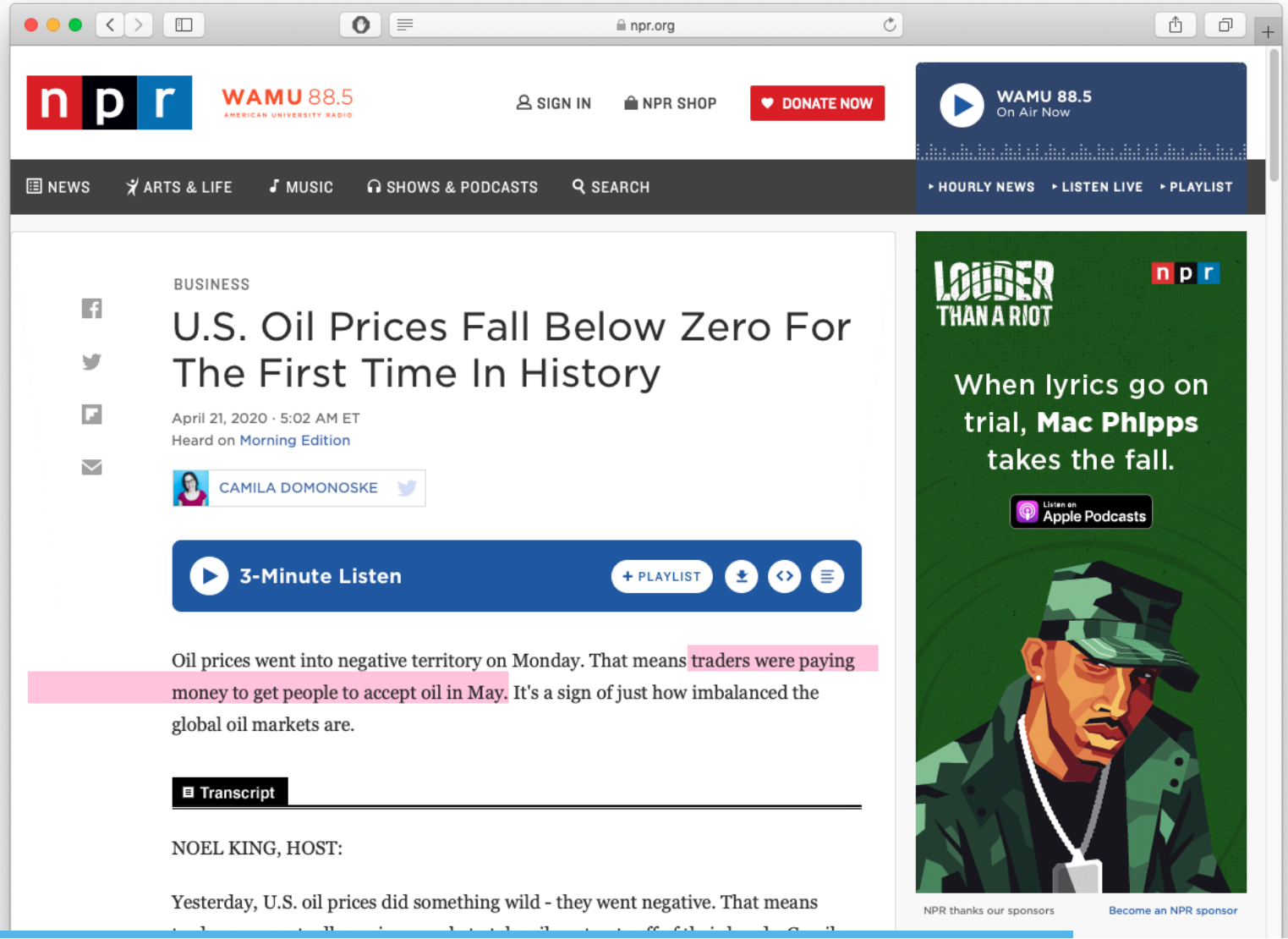


Knowledge, "Speculation," and Prices

- **Futures markets**: where people buy/sell claims on *future* goods at specified prices
  - e.g. "10 barrels of oil at $30/barrel, delivered on November 2021"
  - allows producers to minimize their exposure to major price swings



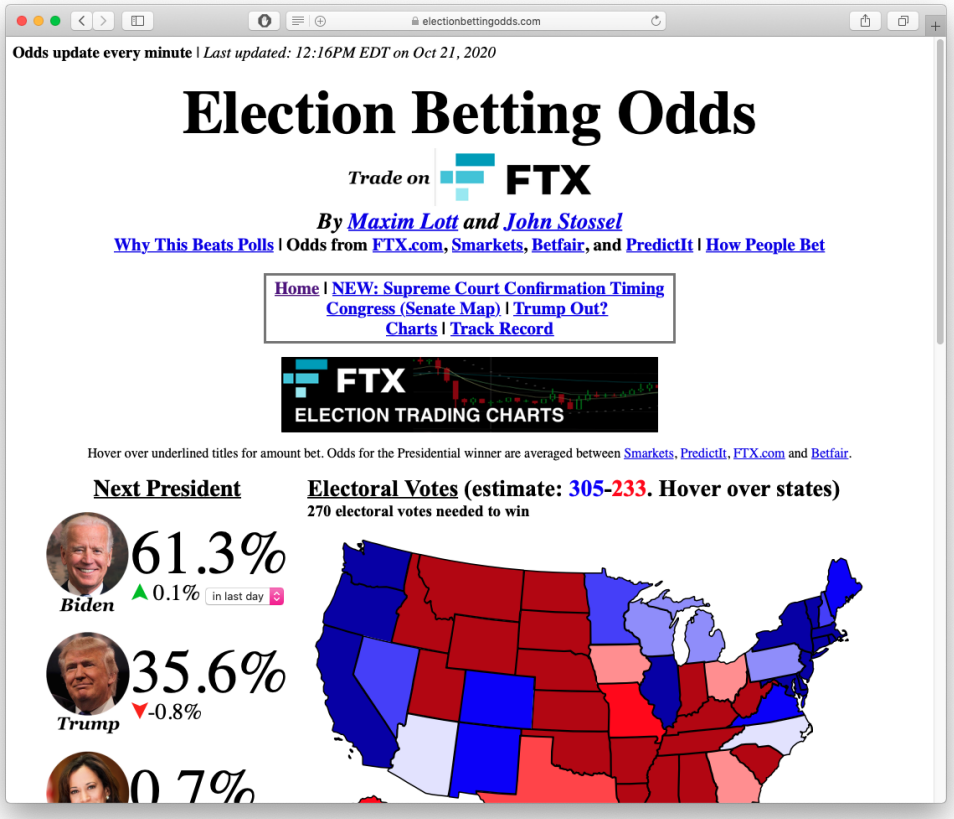
Knowledge, "Speculation," and Prices

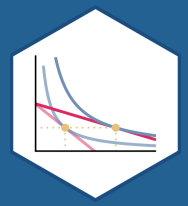


Knowledge, "Speculation," and Prices

- **Prediction markets**: where people buy/sell claims on *verifiable* future outcomes at specified prices
    - Hope to profit on information you believe to be true
    - Provides incentives for people to reveal private information for public benefit
- If you want to know what somebody truly believes, leverage the power of prices and **make a bet**

Knowledge, “Speculation,” and Prices

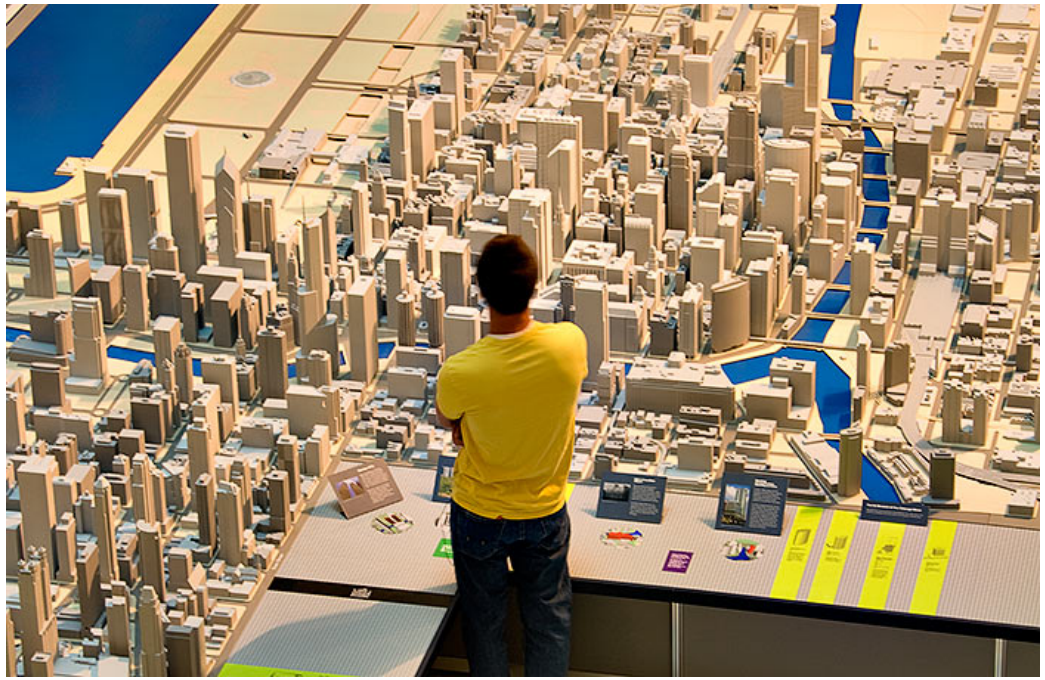




Uncertainty and Profits

Uncertainty, Tacit Information, and Profit I

- **Economic theory**: in a perfectly competitive market, in the long run, economic profit → to zero
- **Real world**: there *are* often economic profits
- Our blackboard models assume perfect information
- In reality we have to deal with **uncertainty**



Uncertainty, Tacit Information, and Profit II

- Imperfect information: mispricing and multiple prices → arbitrage/profit opportunities
    - Some people recognize opportunities ($20 bills) that others do not see
- **In a world of certainty, there would be no profit**
    - The model world of perfect competition is a fictional world of certainty
    - The real world, *because* it's uncertain, *has* profit opportunities!

Uncertainty, Tacit Information, and Profit III

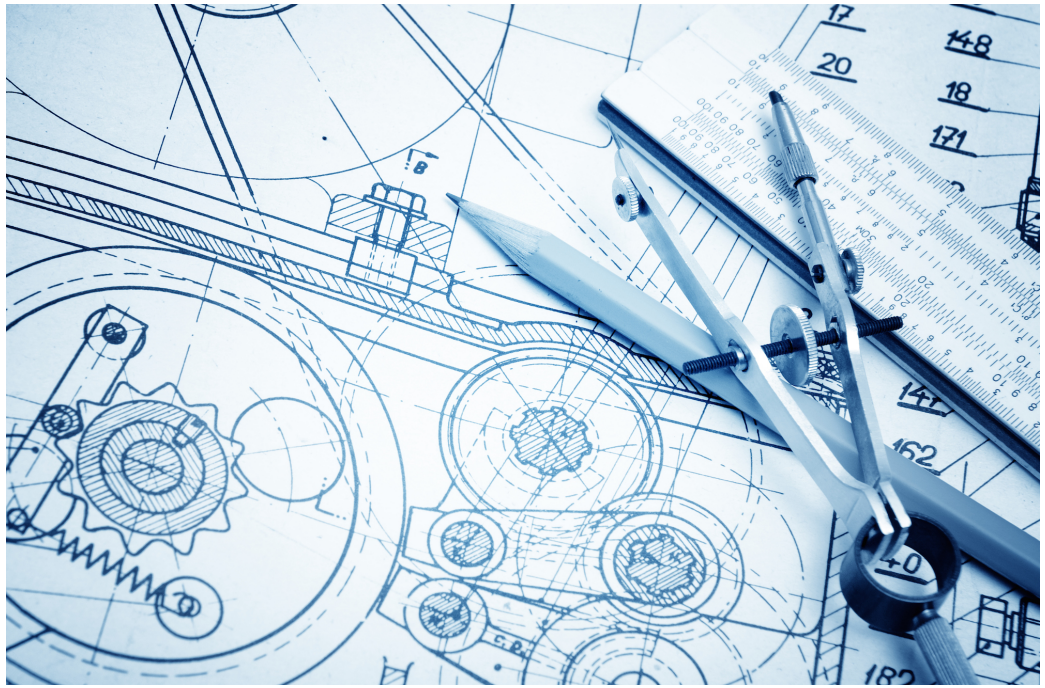
- Firms don't actually *maximize* profits, just a convenient assumption
    - In a world of uncertainty (unlike mere risk), there's no way to *maximize* anything!
- Real world is not merely a constrained maximization problem!
- Better to think in **evolutionary** terms
    - Firms that *best* adapt to market circumstances will earn profit and merely *survive*
    - Whether by skill and talent or just dumb luck!

Uncertainty, Tacit Information, and Profit IV

Reminder: Profits and Entrepreneurship

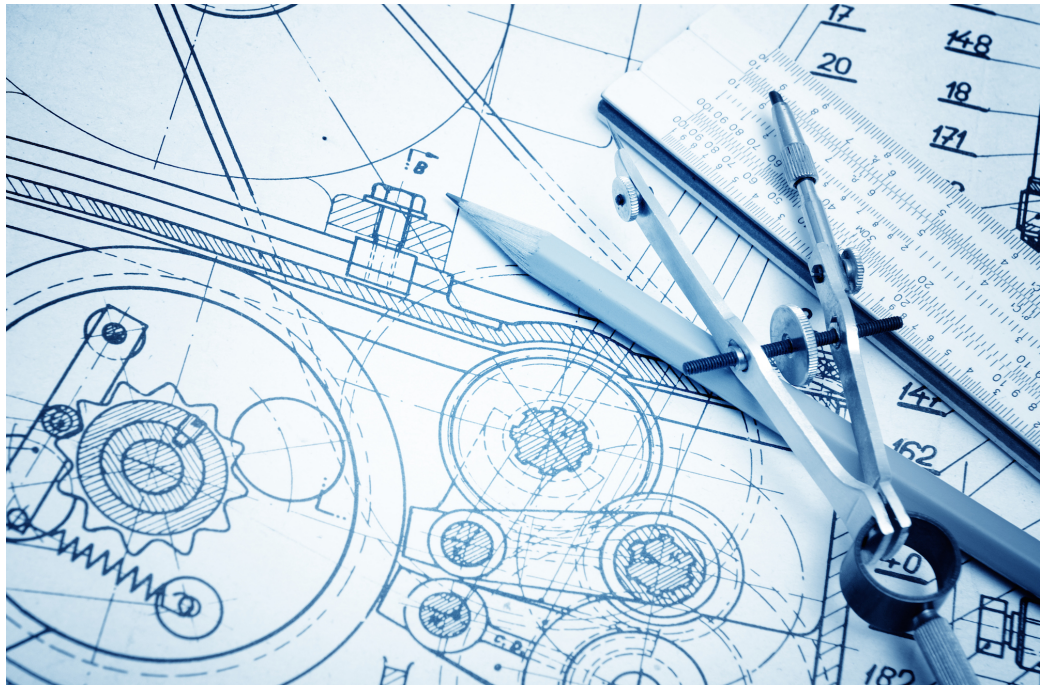
- In markets, production faces **profit-test**:
  - **Is consumer's willingness to pay > opportunity cost of inputs?**
- Profits are an indication that **value is being created for society**
- Losses are an indication that **value is being destroyed for society**
- Survival for sellers in markets *requires* firms continually create value and earn profits or die

Why We Need Prices, Profits, and Losses I



- People often confuse the **economic problem** with a **technological problem**
- **Technological problem**: how to allocate scarce resources to accomplish a particular goal
    - e.g. buy the right combination of goods to maximize utility
    - e.g. buy the right combination of inputs and produce output to maximize profits
    - given stable prices, preferences, and technologies, **a computer can solve this problem**

Why We Need Prices, Profits, and Losses II



- **Economic calculation problem**: how to determine which of the infinite technologically-feasible options are *economically* viable?
- **How to best make use of dispersed knowledge to coordinate conflicting plans of individuals for their own ends?**
- ONLY can be **discovered** through competition, prices, profits & losses

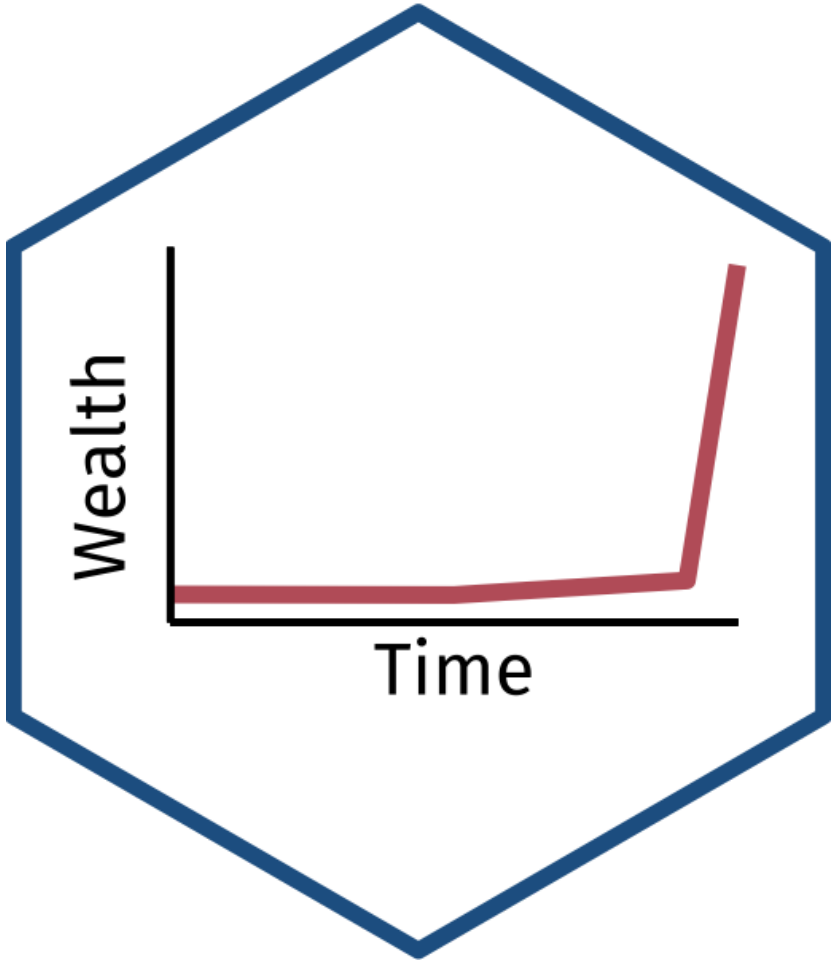
What if there Were No Prices? I

What if there Were No Prices? II

For More On The Socialist Calculation Debate

See lesson 4.2 in my History of Economic Thought Course: The Socialist Calculation Debate

And How Did The Soviet Union "Work" For So Long?



See lesson 12 in my Economics of Development Course: Russia and the Post-Communist Transition