

3.3 – Social Functions of Market Prices

ECON 306 • Microeconomic Analysis • Spring 2021

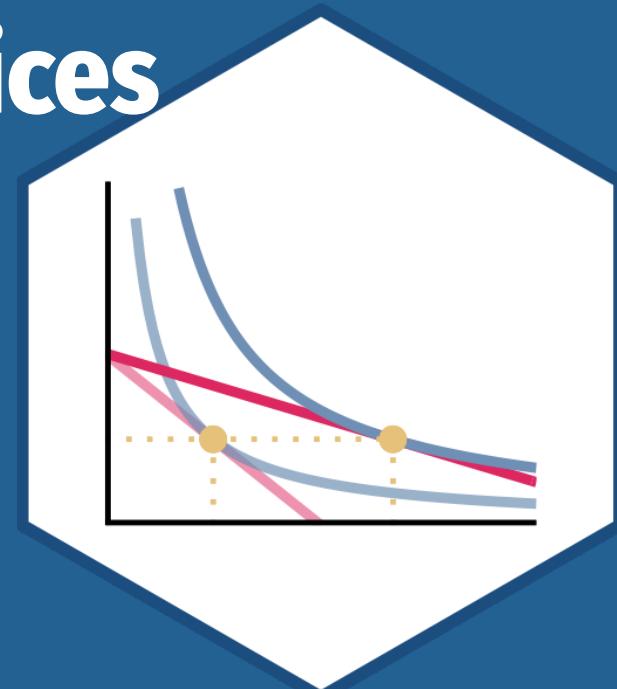
Ryan Safner

Assistant Professor of Economics

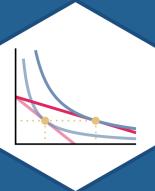
 safner@hood.edu

 [ryansafner/microS21](https://github.com/ryansafner/microS21)

 microS21.classes.ryansafner.com



Outline

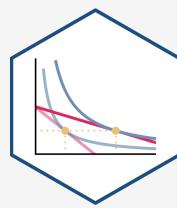


Why Markets Tend to Equilibrate, Redux

The Social Functions of Market Prices

Uncertainty and Profits

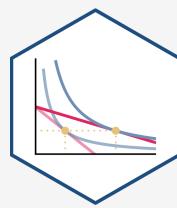
The Model is Not the Reality I



- 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

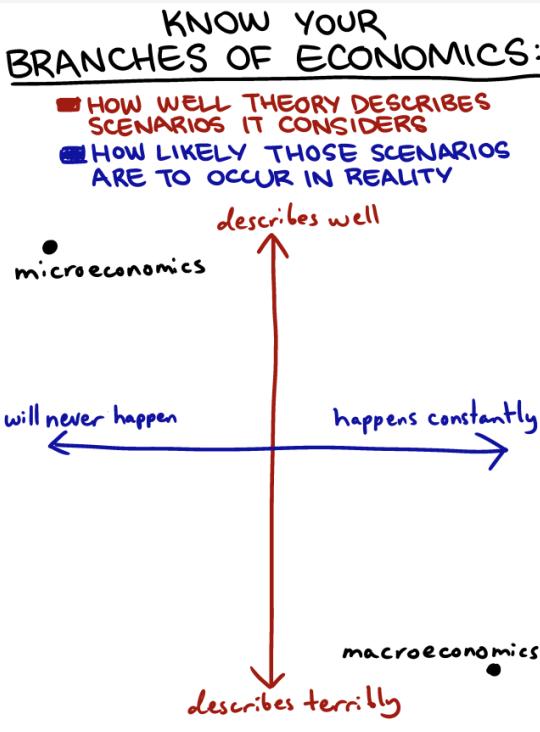
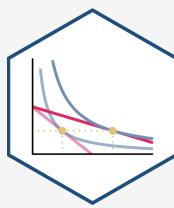
"All models are wrong. Some are useful" -
George Box

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

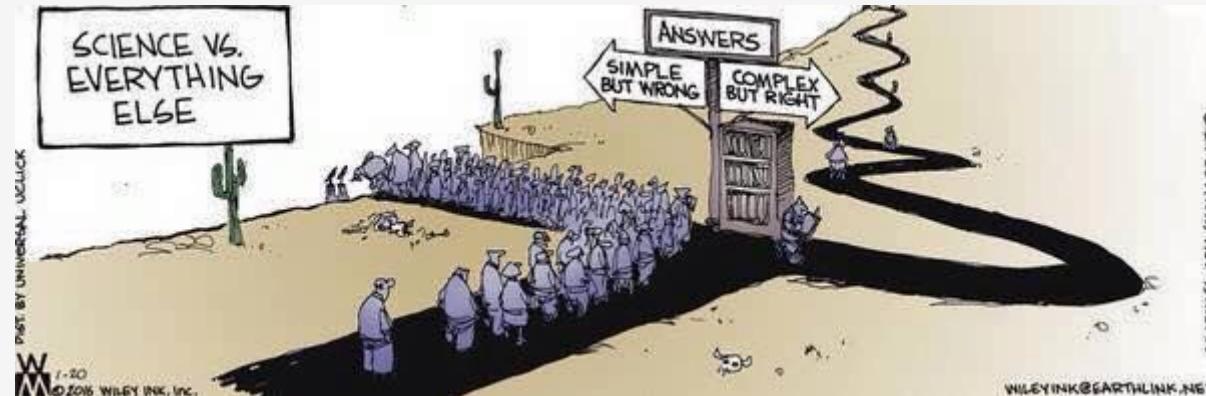
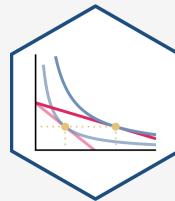
The Model is Not the Reality III

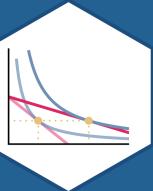


Source: [SMBC](#)

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

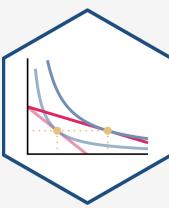
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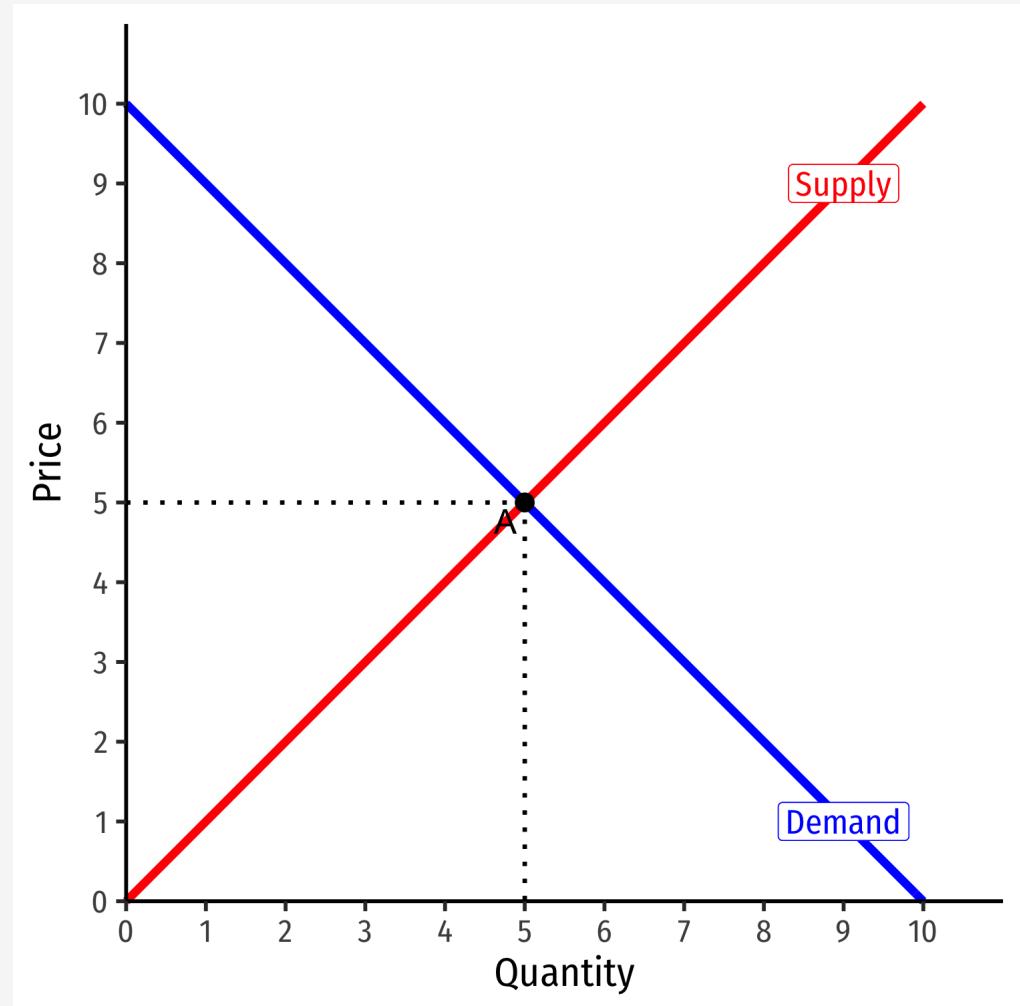


Why Markets Tend to Equilibrate, Redux

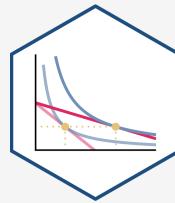
The Law of One Price I



- **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, [Math Processing Error])*

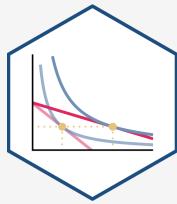


The Law of One Price II

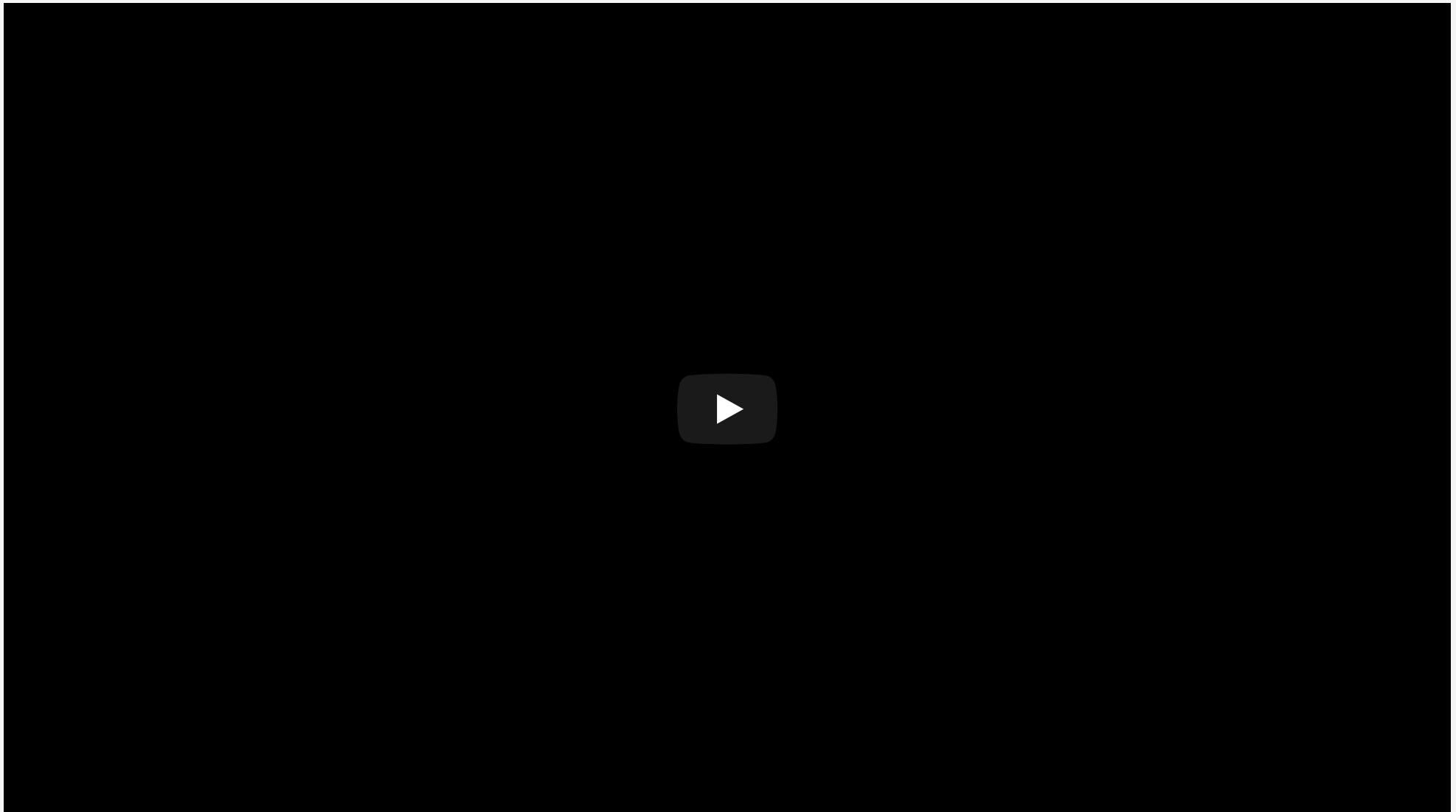
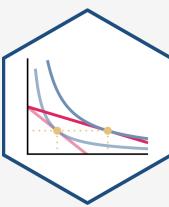


- Consider if there are *multiple* different prices for *same* good:
- **Arbitrage** opportunities: optimizing individuals recognize **profit opportunity**:
 - Buy at low price, resell at high price!
 - There are possible gains from trade or gains from innovation to be had
- **Entrepreneurship**: recognizing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

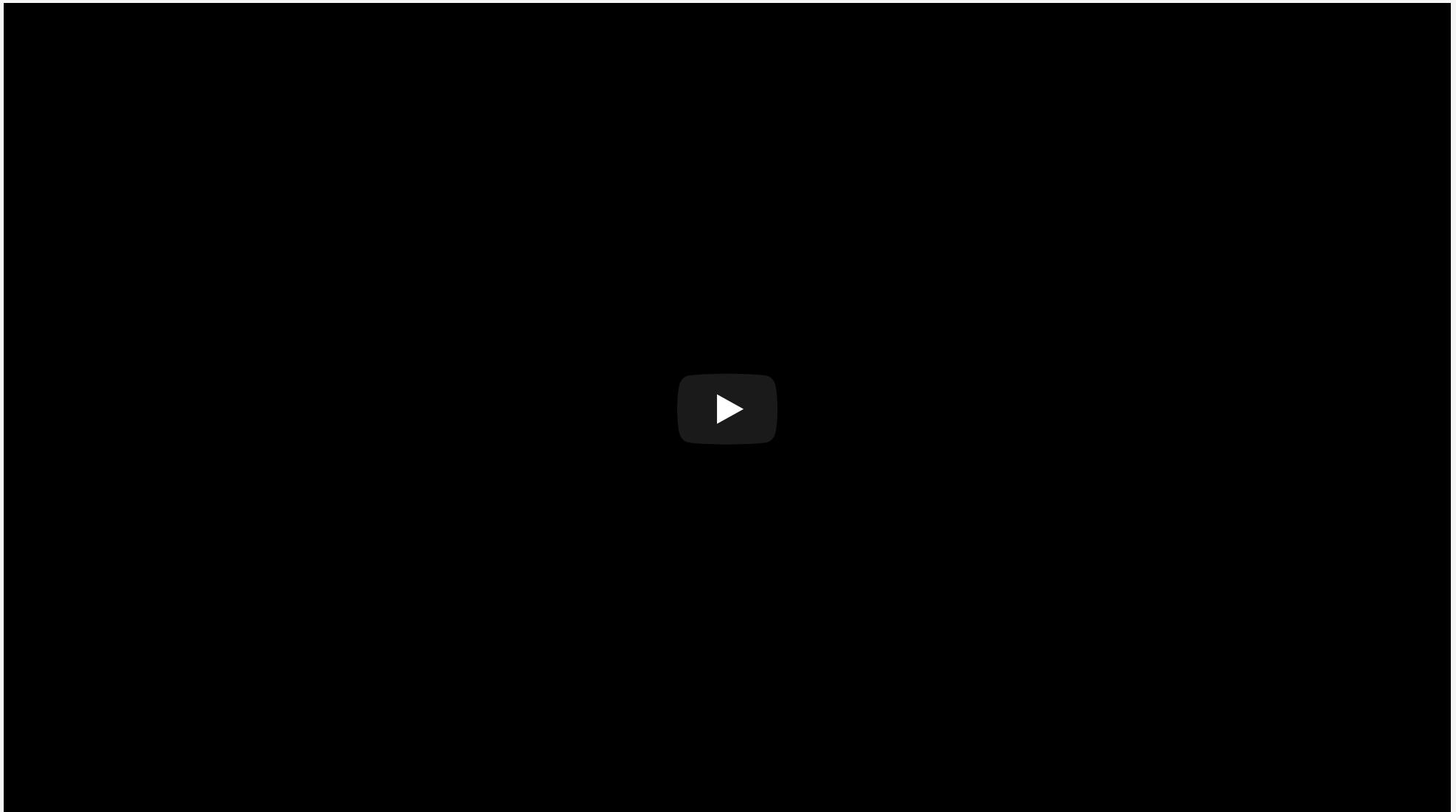
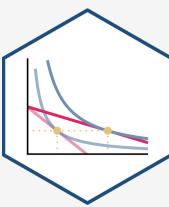
Arbitrage and Entrepreneurship I



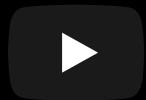
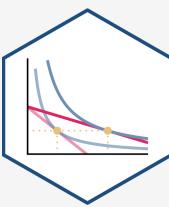
Arbitrage and Entrepreneurship II



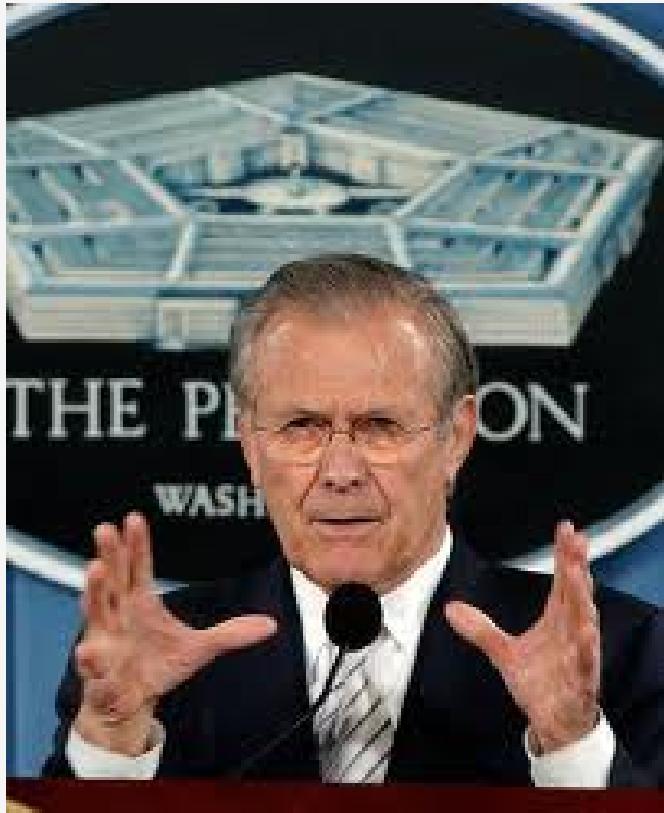
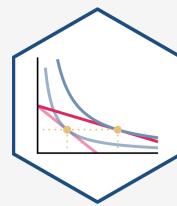
Arbitrage and Entrepreneurship III



Uncertainty vs. Risk

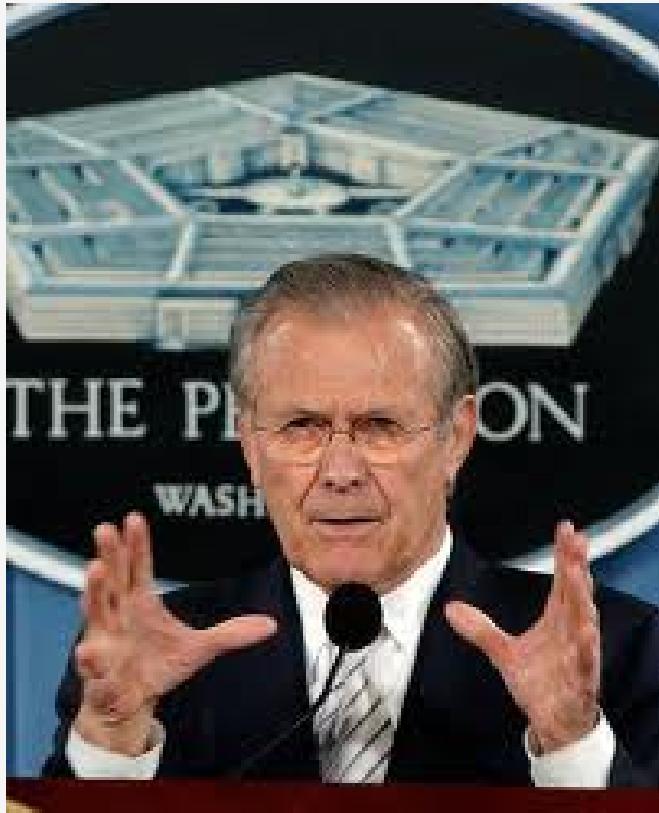
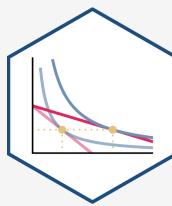


Uncertainty vs. Risk



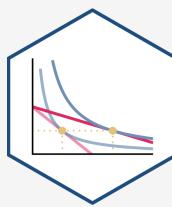
- “Known knowns”: perfect information
- “Known unknowns”: risk
 - We know the probability distribution of states that *could* happen
 - We just don't know *which* state will be realized
 - We can estimate probabilities, maximize expected value, minimize variance, etc.

Uncertainty vs. Risk



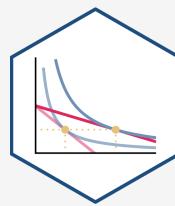
- “**Unknown unknowns**”: **uncertainty**
 - We don’t even know the probability distribution of states that *could* happen
 - *No model to optimize* in a world of uncertainty!

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

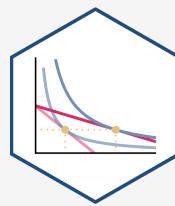


“If I had asked people what they wanted, they would have said **faster horses.**” - Henry Ford

Henry Ford

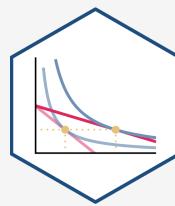
1863-1947

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

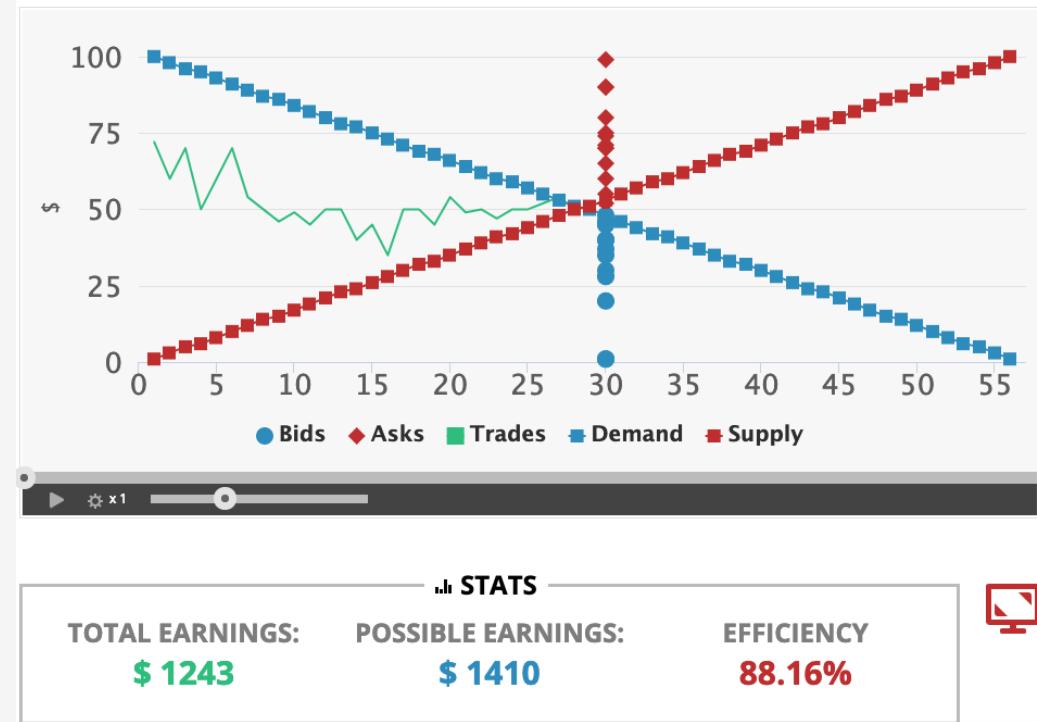
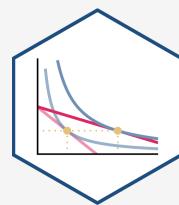


Mark Zuckerberg

1984-

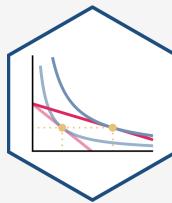
"Why were we the ones to build [Facebook]? We were just students. We had way fewer resources than big companies. If they had focused on this problem, they could have done it. The only answer I can think of is: **we just cared more. While some doubted** that connecting the world was actually important,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

How Markets Get to Equilibrium I



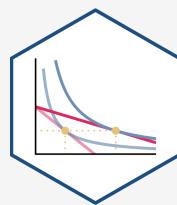
- Nobody knows “the right price” for things
- Each buyer and seller only know **their own** reservation prices
- Buyers and sellers adjust their bids/asks
- Markets do not *start* competitive, but *become* competitive!
- New entrepreneurs enter to try to capture gains from trade/innovation
- As these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

How Markets Get to Equilibrium II

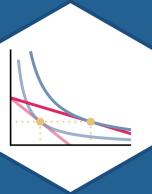


- Errors and imperfect information [*Math Processing Error*] multiple prices
 - [*Math Processing Error*] arbitrage opportunities [*Math Processing Error*] entrepreneurship
 - [*Math Processing Error*] correcting mistakes [*Math Processing Error*] people update their behavior & expectations
- Markets are **discovery processes** that *discover* the right prices, the optimal uses of resources, and cheapest production

How Markets Get to Equilibrium III

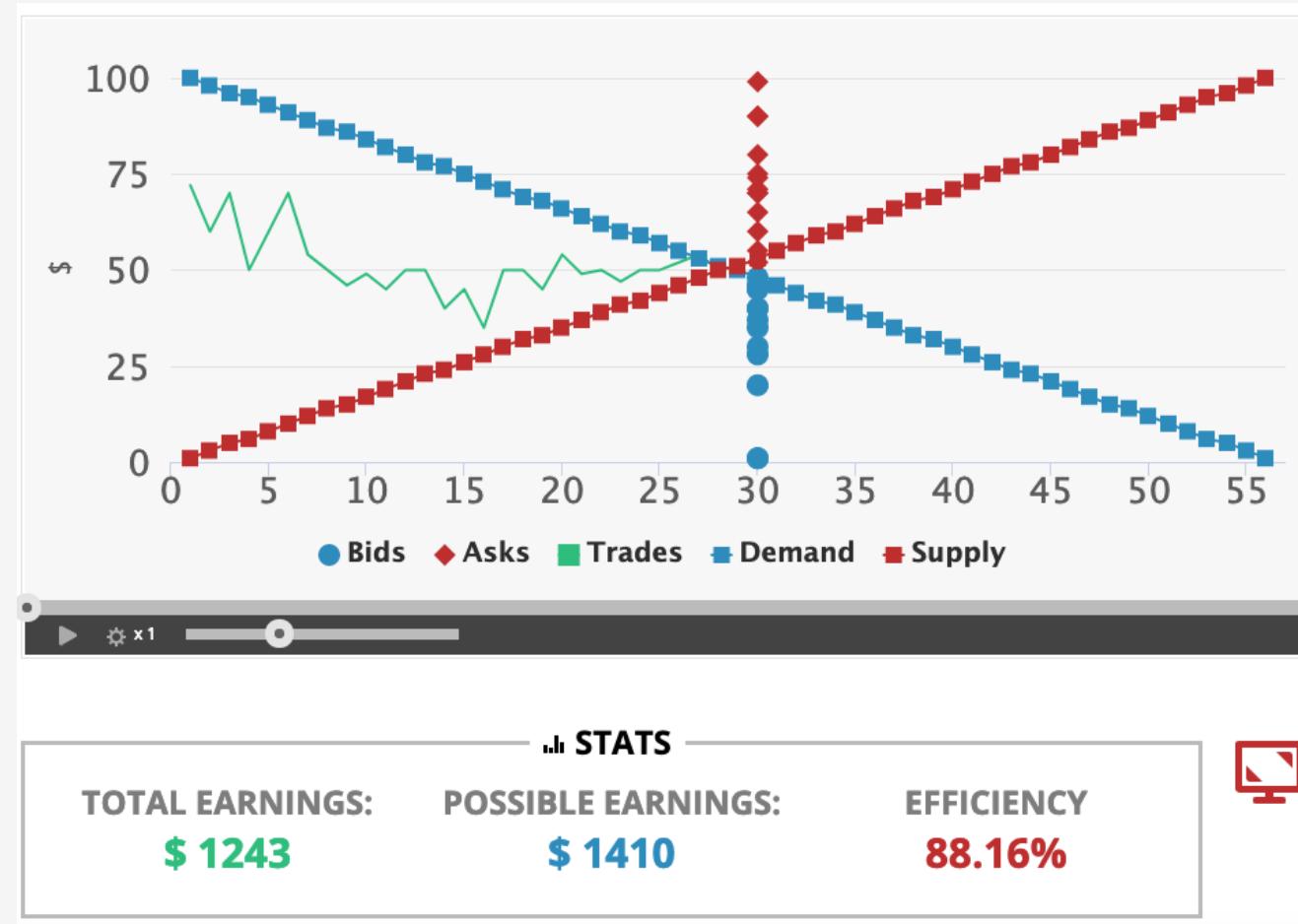
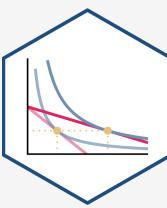


- Economy as a cat-and-mouse game between:
 - **Mouse:** preferences, technologies, alternative uses of resources
 - **Cat:** market prices, least-cost technologies
- Cat always chasing mouse
 - Mouse *always* moving
 - Any time cat hasn't caught mouse: profit opportunities
- **IF** mouse *froze*, market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



The Social Functions of Market Prices

Prices are Signals I



STATS

TOTAL EARNINGS:

\$ 1243

POSSIBLE EARNINGS:

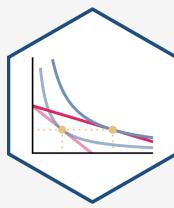
\$ 1410

EFFICIENCY

88.16%

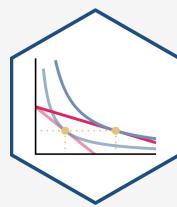


Prices are Signals II



- 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

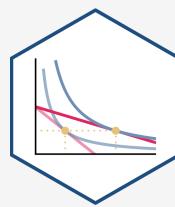
The Social Functions of Prices I



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

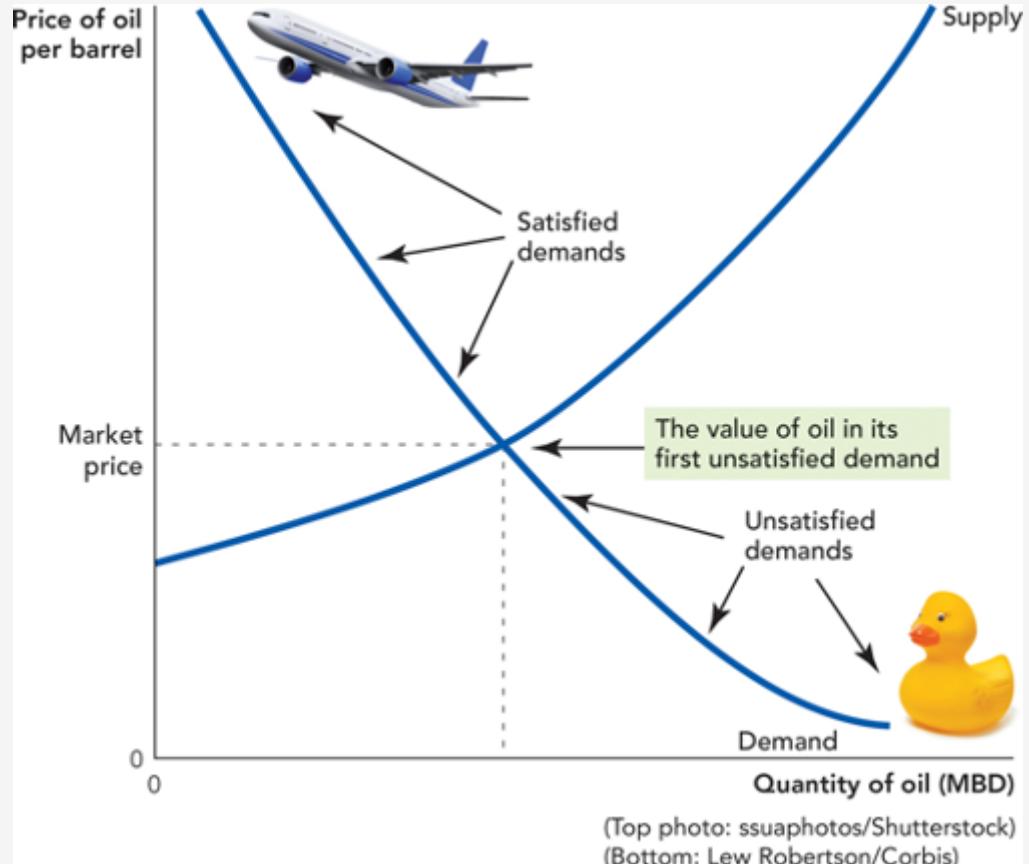
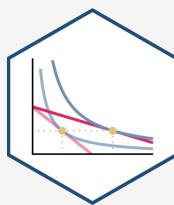
The Social Functions of Prices II



A relatively low price

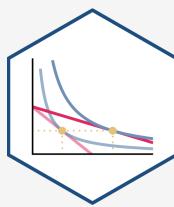
- **Conveys information:** good is relatively abundant
- **Creates incentives for:**
 - **Buyers:** substitute away from expensive goods towards this good
 - **Sellers:** Produce less of this good, talents better served elsewhere
 - **Entrepreneurs:** talents better served elsewhere: find more severe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

The Social Functions of Prices III

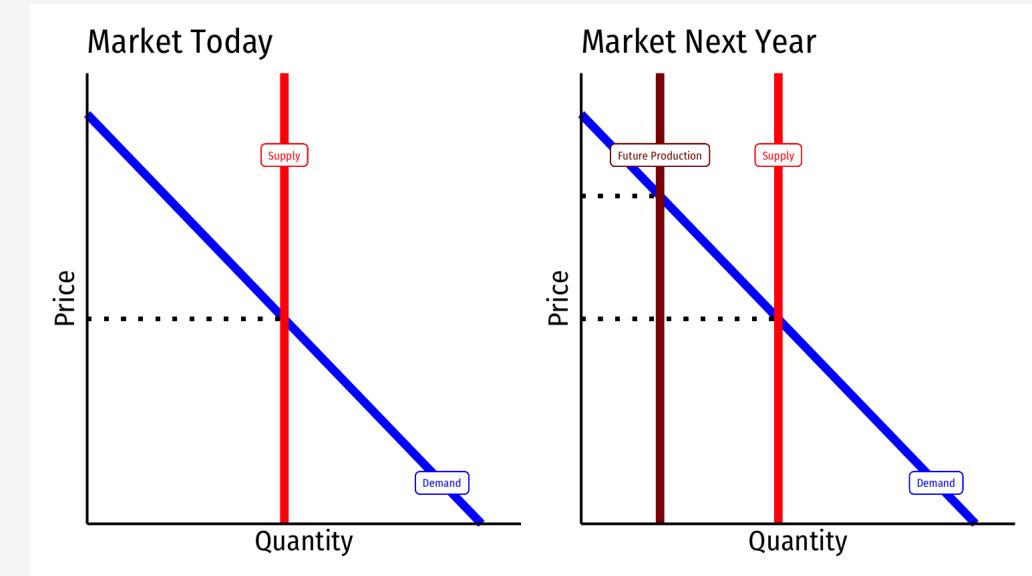


- Prices tell us how to allocate scarce resources among competing uses
- Think of diminishing marginal utility:
 - allocate scarce good to highest-valued use first
 - as supply becomes more plentiful (price falls), can allocate more units of the good to lower-valued uses (higher-valued uses already satisfied)

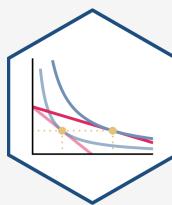
Knowledge, “Speculation,” and Prices



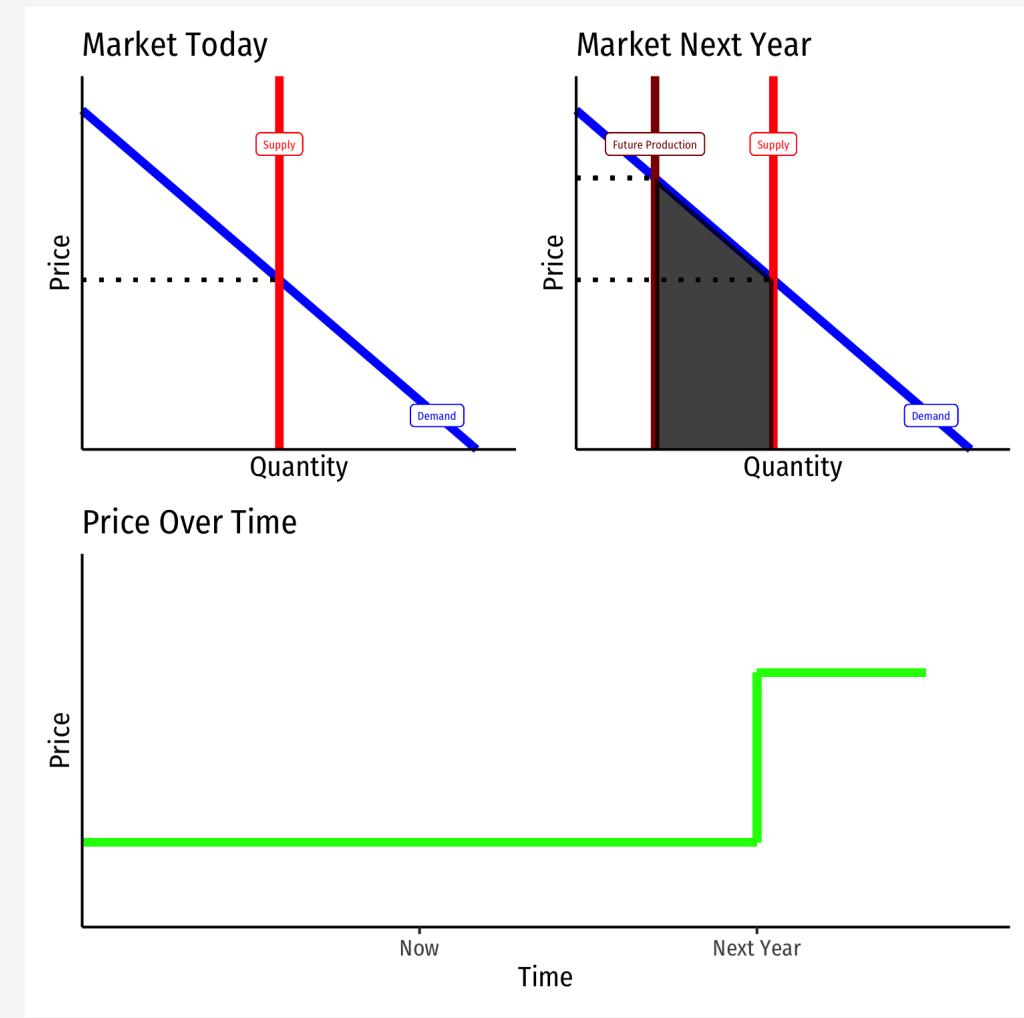
- Suppose (oil) producers believe there is going to be a shortage (of oil) in a year



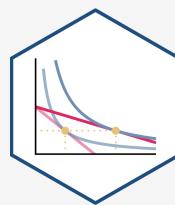
Knowledge, “Speculation,” and Prices



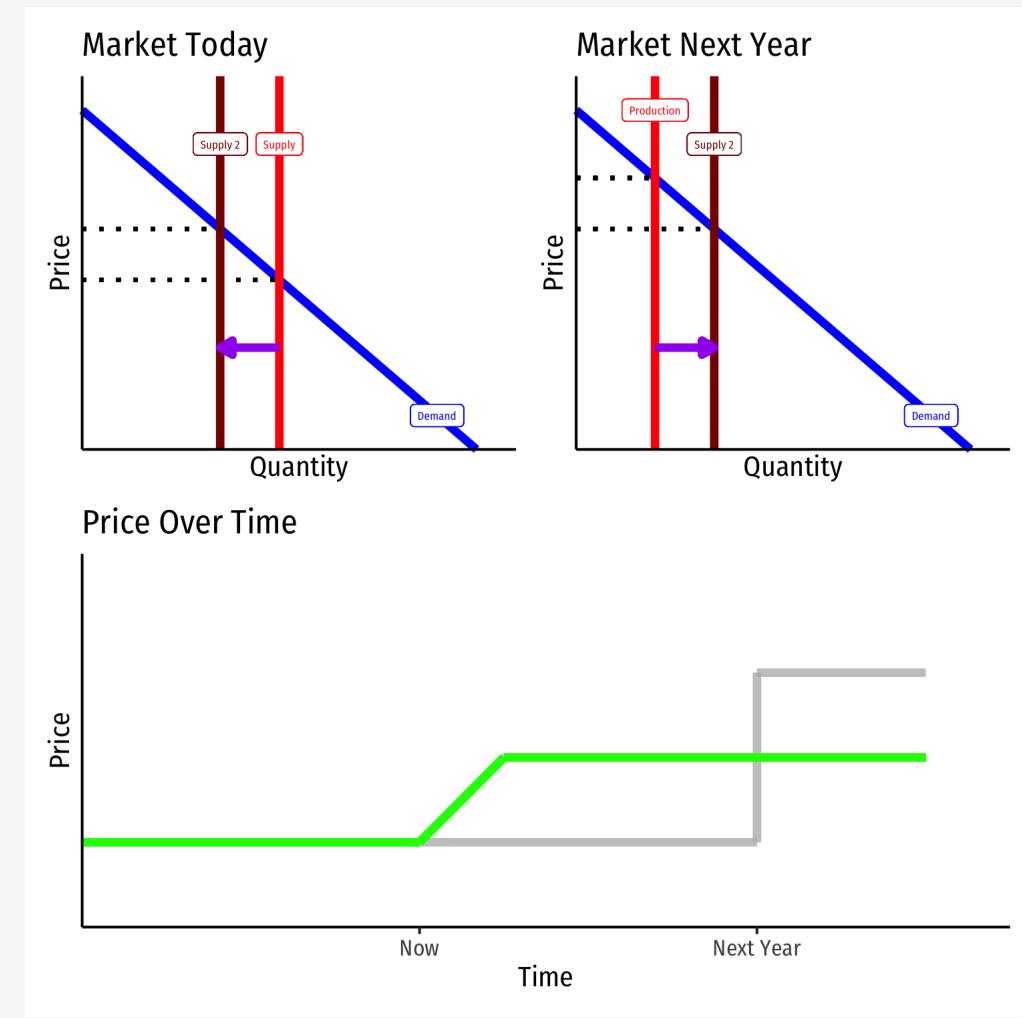
- Suppose (oil) producers believe there is going to be a shortage (of oil) in a year
- Suppose they do nothing
- In the future, a sudden spike in price
 - Demand is inelastic to sudden changes, consumers can't adjust on the fly
 - A lot of lost economic surplus (shaded)



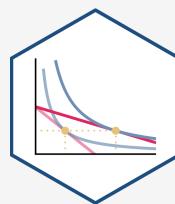
Knowledge, “Speculation,” and Prices



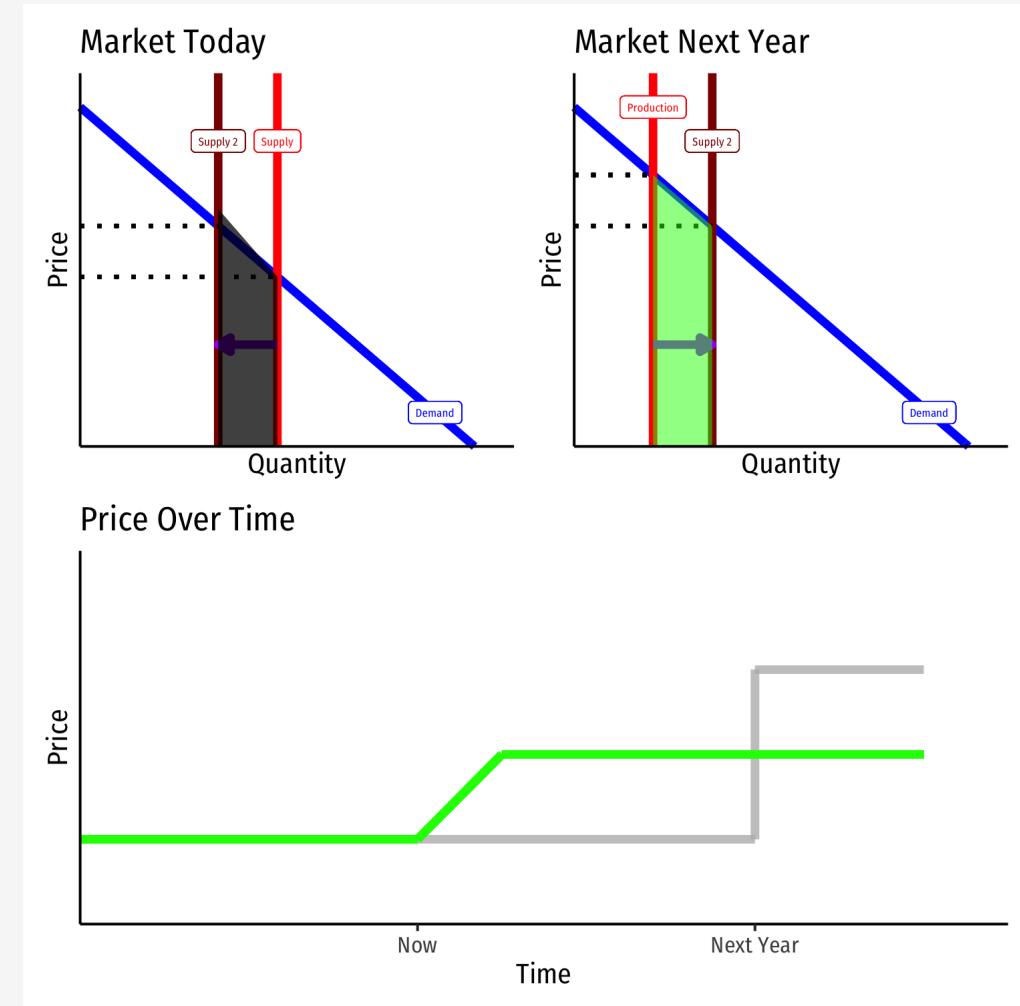
- Suppose (oil) producers believe there is going to be a shortage (of oil) in a year
- Suppose instead they **speculate**, and try to profit from the future price change
 - TODAY: put some inventory **into storage** (take off market)
 - FUTURE: when price is higher, sell more **from inventories**



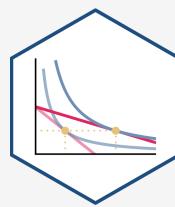
Knowledge, “Speculation,” and Prices



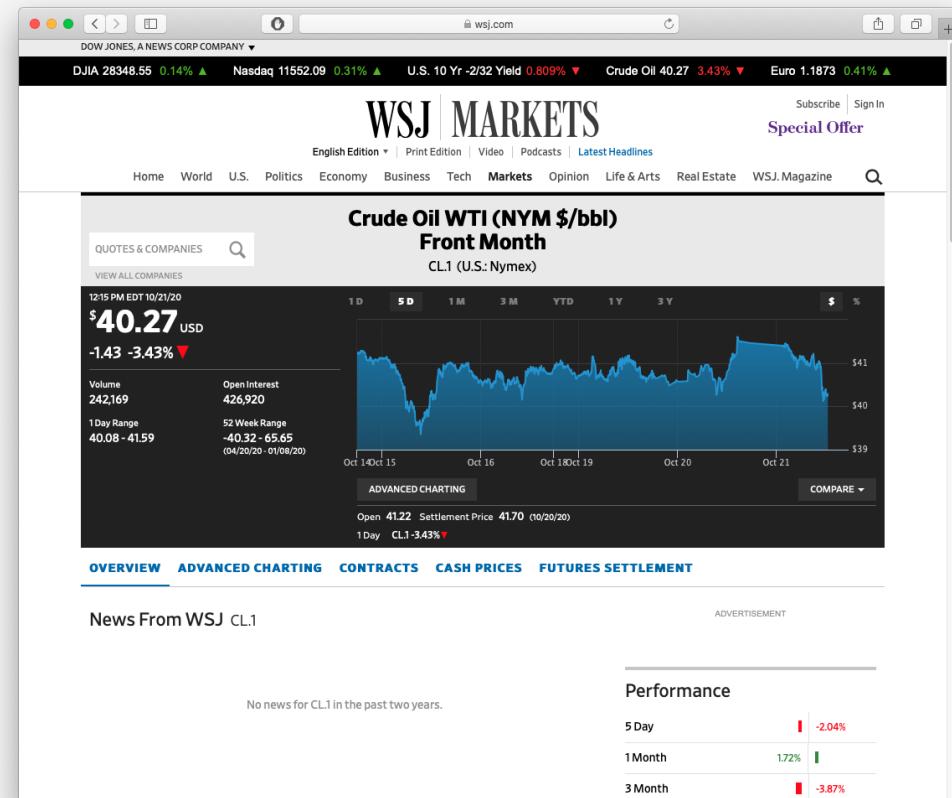
- Suppose (oil) producers believe there is going to be a shortage (of oil) in a year
- Suppose instead they **speculate**, and try to profit from the future price change
 - TODAY: put some inventory **into storage** (take off market)
 - FUTURE: when price is higher, sell more **from inventories**
- **Price-smoothing**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



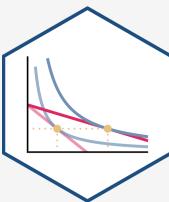
Knowledge, “Speculation,” and Prices



- **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



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BUSINESS

U.S. Oil Prices Fall Below Zero For The First Time In History

April 21, 2020 · 5:02 AM ET
Heard on [Morning Edition](#)

CAMILA DOMONOSKE

3-Minute Listen + PLAYLIST

Oil prices went into negative territory on Monday. That means traders were paying money to get people to accept oil in May. It's a sign of just how imbalanced the global oil markets are.

Transcript

NOEL KING, HOST:

something wild - they went negative. That means

Louder Than A Riot

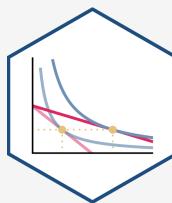
When lyrics go on trial, **Mac Philips** takes the fall.

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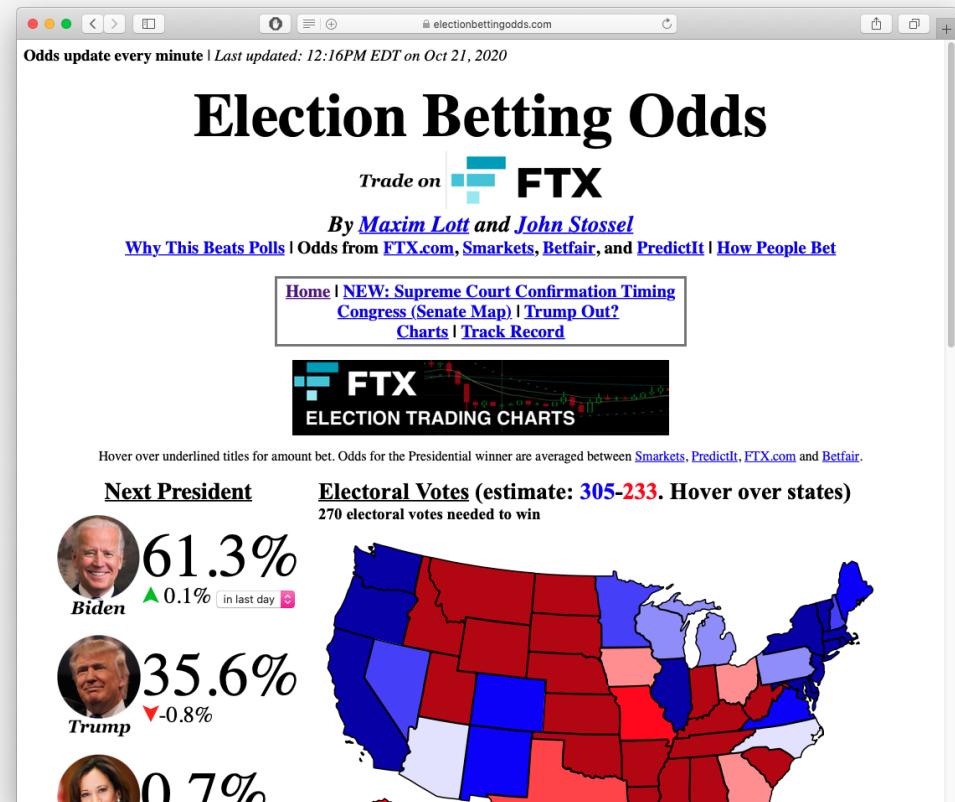
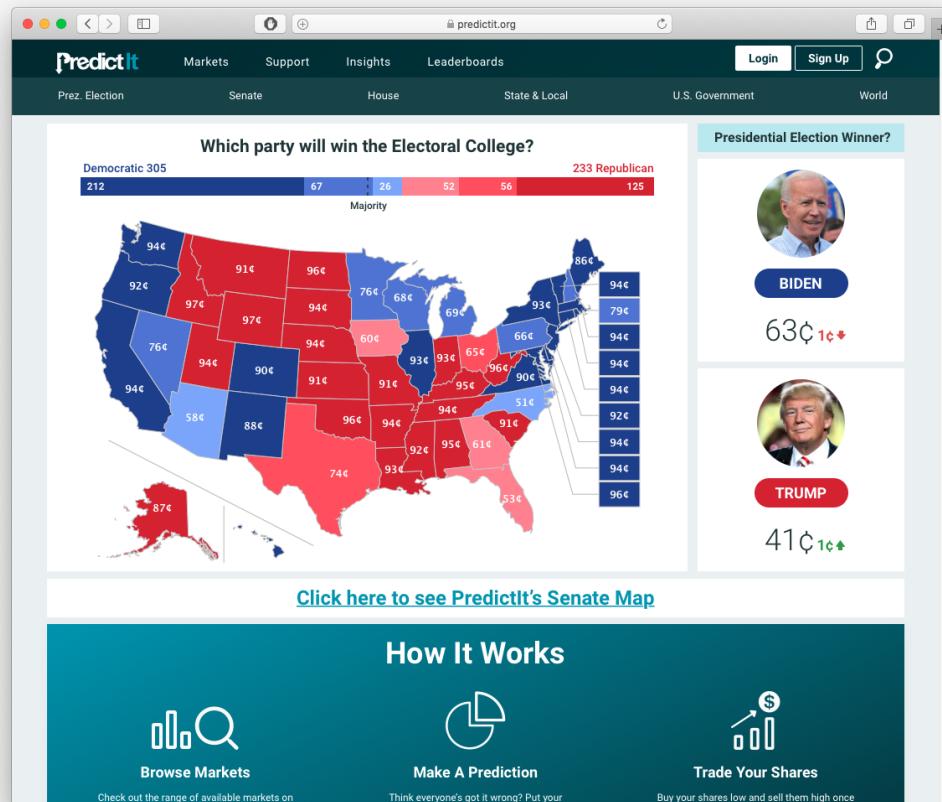
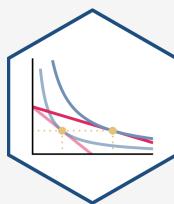
Knowledge, “Speculation,” and Prices

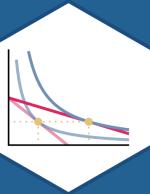


- **Prediction markets:** where people buy/sell claims on *verifiable* future outcomes at specified prices
 - Hope to profit on information you believe to be true
 - Provides incentives for people to reveal private information for public benefit
- If you want to know what somebody truly believes, leverage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



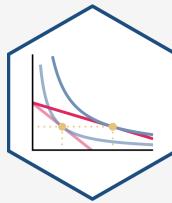
Knowledge, “Speculation,” and Prices





Uncertainty and Profits

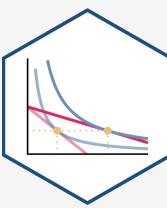
Uncertainty, Tacit Information, and Profit I



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



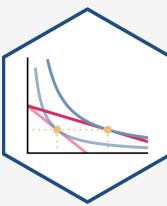
Uncertainty, Tacit Information, and Profit II



- Imperfect information: mispricing and multiple prices $\text{[Math Processing Error]}$ 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!



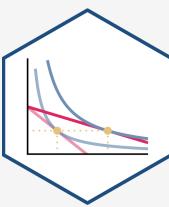
Uncertainty, Tacit Information, and Profit III



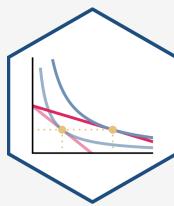
- Firms don't actually *maximize* profits, just a convenient assumption
 - In a world of uncertainty (unlike mere risk), there's no way to *maximize* anything!
- Real world is not merely a constrained maximization problem!
- Better to think in **evolutionary** terms
 - Firms that *best* adapt to market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



Uncertainty, Tacit Information, and Profit IV

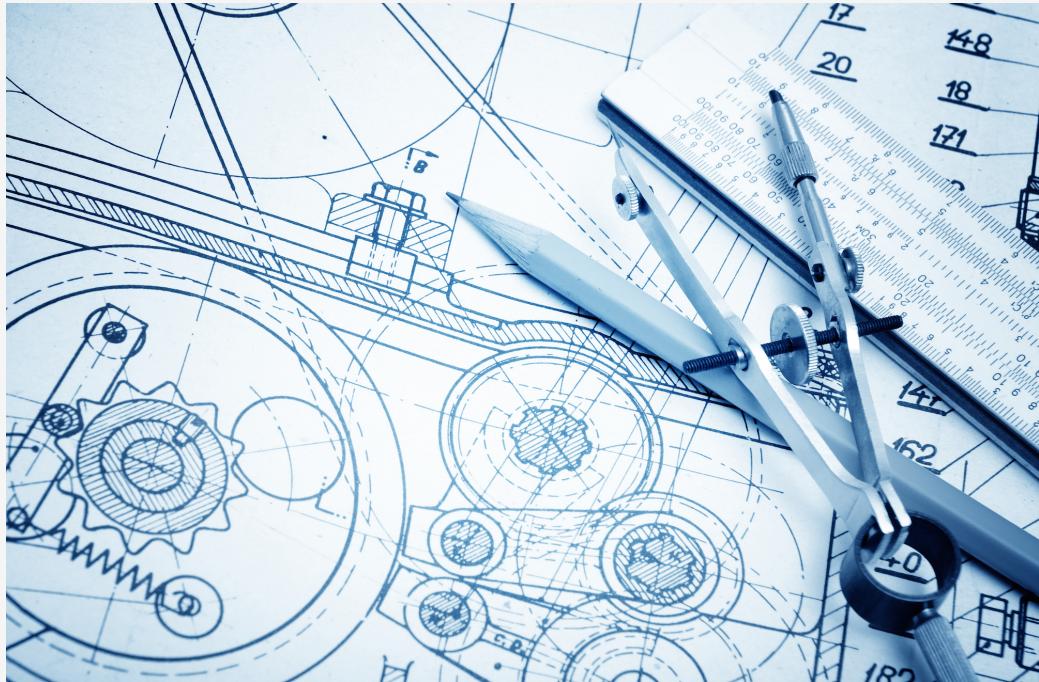
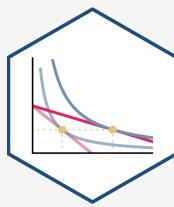


Reminder: Profits and Entrepreneurship



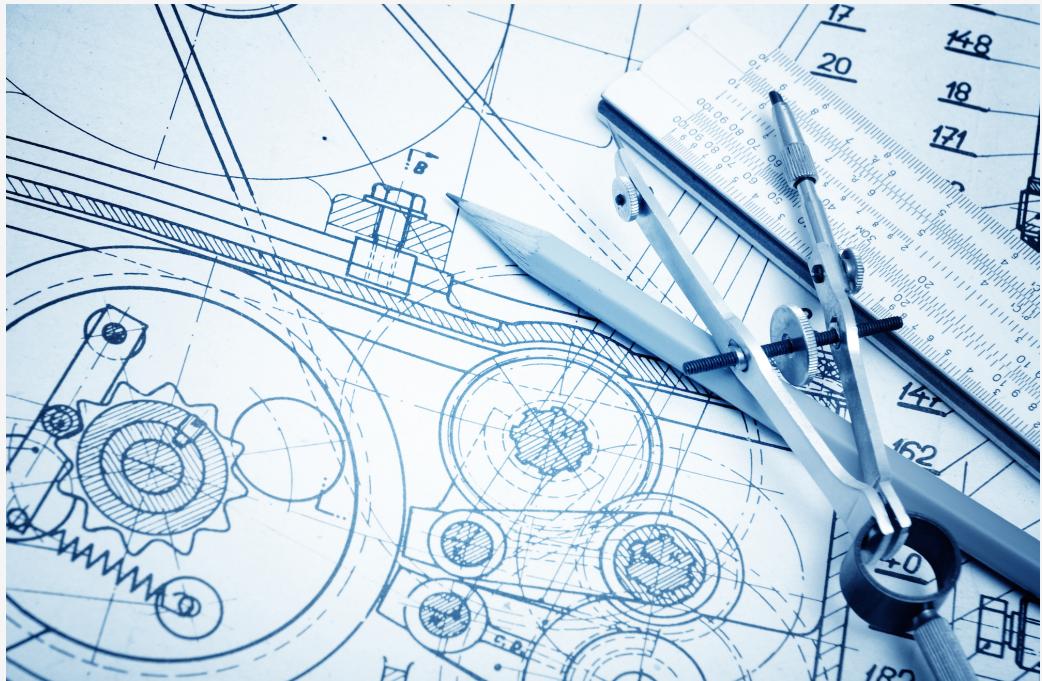
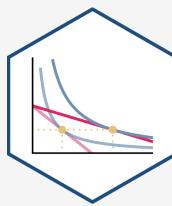
- In markets, production faces **profit-test**:
 - Is consumer's willingness to pay [*Math Processing Error*] opportunity cost of inputs?
- Profits are an indication that **value is being created for society**
- Losses are an indication that **value is being destroyed for society**
- Survival for sellers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

Why We Need Prices, Profits, and Losses I



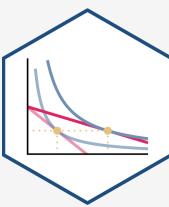
- People often confuse the **economic problem** with a **technological problem**
- **Technological problem:** how to allocate scarce resources to accomplish a particular goal
 - e.g. buy the right combination of goods to maximize utility
 - e.g. buy the right combination of inputs and produce output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

Why We Need Prices, Profits, and Losses II

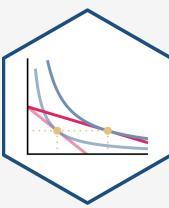


- **Economic calculation problem:** how to determine which of the infinite technologically-feasible options are *economically* viable?
- How to best make use of dispersed knowledge to coordinate conflicting plans of individuals for their own ends?
- ONLY can be **discovered** through competition, prices,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

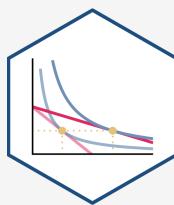
What if there Were No Prices? I



What if there Were No Prices? II

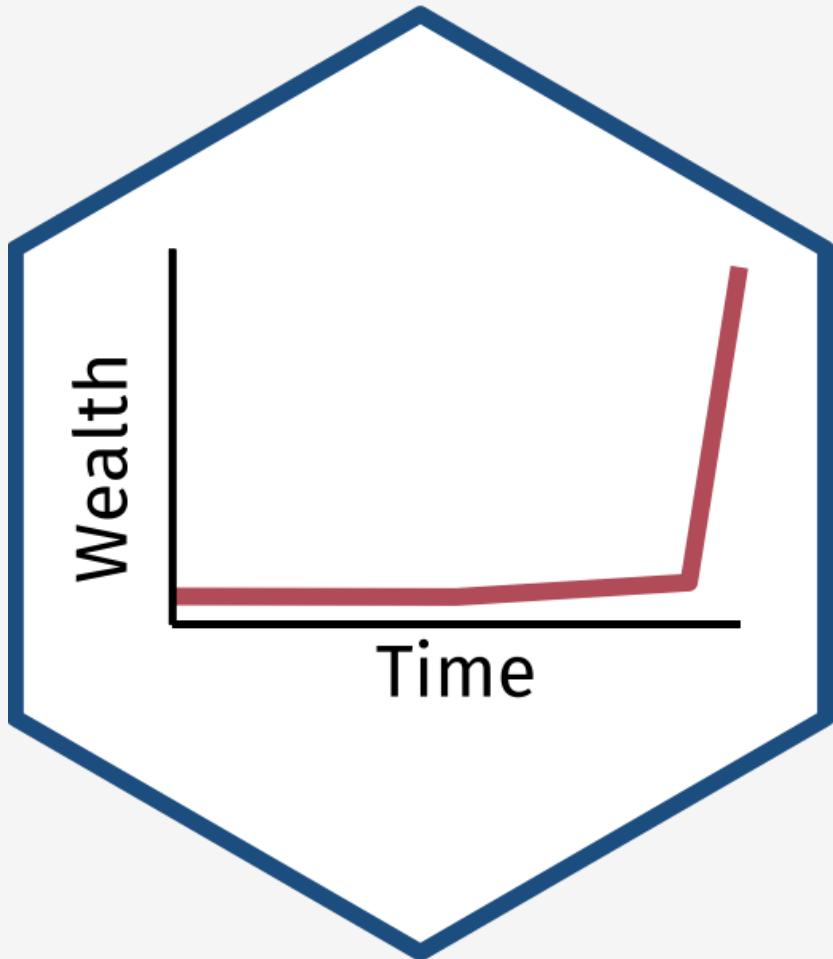
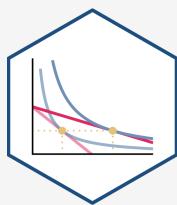


For More On The Socialist Calculation Debate



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 11 in my Economics of Development Course: [Russia and the Post-Communist Transition](#)