

Economics 1: Introduction to Economics

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Administrivia

January 27, 2016 8-9 AM
Wheeler Auditorium, U.C. Berkeley

i>Clickers

- i>Clicker base station is supposed to appear today
- We need the base station because Wheeler does not have the wifi capacity to support 600 connections
- We need the base station because the local cellular network does not have the capacity either
- The LORD willing and the creek don't rise, we will start with i>Clickers come Monday
- Be prepared!

Webtools: Nobody Appears to Like iCloud

- Apple iCloud performance appears to have deteriorated massively over the course of the past year or so
- Therefore we are moving to .pdf files
- The .pdf files will be kept on <http://bradford-delong.com>
- Why not keep .pdfs on bCourses?
 - Because any files kept on bCourses's predecessor bSpaces are about to be trashed, and all links to them broken. Fool me once, shame on you. Fool me twice, shame on me...

Webtools: Nobody Appears to Like bCourses

- The idea of creating objects for each lecture that then automagically appear in a dynamically-generated syllabus list and on a dynamically-generated calendar is a good one.
- But...
- You go to the syllabus page on bCourses, scroll down, find the lecture, click on the lecture, and...
 - The calendar window opens...
 - An ugly subwindow with the lecture-object opens...
 - Which you then have to click on to get anywhere
 - Opening three windows and subwindows instead of one is not good

Webtools: Proposed Solution

- So we are going to link every file related to the course as a pdf off of: <http://www.bradford-delong.com/course-syllabus-econ-1-spring-2016-uc-berkeley.html>
- You can still get there via bCourses: that file will be mirrored and linked to at: <https://bcourses.berkeley.edu/courses/1411451/assignments/syllabus>
- And you may also want to check: <http://www.bradford-delong.com/2016/01/econ-1-spring-2016-uc-berkeley-things-moved-off-the-course-syllabus-page.html>

Rough Course Schedule:

Microeconomics I

- We are now far enough along and have gained enough feedback to have a rough sense of what is possible:
- Lecture: Course Intro: Thinking Like an Economist (Read Bernanke, Frank, et al. cos 1-2) (2016-01-20 We)
- Assignment: READ! Partha Dasgupta (2007): Economics: A Very Short Introduction <http://amzn.to/1ZpuFCQ> (Oxford: Oxford University Press: 9780192853455)
- Lecture: Supply and Demand (Read Bernanke, Frank, et al. cos 3-4) (2016-01-25 Mo) | Section Exercise 25/26 | Section Exercise 27/28
- Assignment: Letter to GSI due (2016-01-25 Mo/-26 Tu)
- Lecture: Equilibrium (Read Bernanke, Frank, et al. ch 5) (2016-01-27 We)
- Lecture: Surplus (Read Bernanke, Frank, et al. ch 6) (2016-02-01 Mo)
- Assignment: Problem Set 1 due (2016-02-01 Mo/-02 Tu)
- Lecture: Market Blockages: Price Ceilings, Price Floors, Taxes, and Quotas (Read Bernanke, Frank, et al. ch 7) (2016-02-03 We)
- Lecture: Market Power (Read Bernanke, Frank, et al. ch 8) (2016-02-08 Mo)

Rough Course Schedule:

Microeconomics II

- Assignment: Problem Set 2 due (2016-02-08 Mo/-09 Tu)
- Lecture: Strategic Interactions (Read Bernanke, Frank, et al. ch 9) (2016-02-10 We)
- Lecture: Externalities and Property Rights (Read Bernanke, Frank, et al. ch 10) (2016-02-17 We)
- Lecture: Economics of Information (Read Bernanke, Frank, et al. ch 11) (2016-02-22 Mo)
- Assignment: Problem Set 3 due (2016-02-22 Mo/-23 Tu)
- Lecture: Labor Markets and Income Distribution (Read Bernanke, Frank, et al. ch 12) (2016-02-24 We)
- Lecture: Adverse Selection and Moral Hazard (Read Bernanke, Frank, et al. ch 13) (2016-02-29 Mo)
- Assignment: Problem Set 4: due (2016-02-29 Mo/-03-01 Tu)
- Lecture: Public Goods and Political Economy (Read Bernanke, Frank, et al. ch 14) (2016-03-02 We)
- Lecture: What We Have Left Out in Microeconomics (2016-03-07 Mo)
- Assignment: Problem Set 5 due (2016-03-07 Mo/-08 Tu)
- We: MICRO MIDTERM (2016-03-09)

Rough Course Schedule:

Macroeconomics I

- Lecture: Measuring the Macroeconomy (Read Bernanke, Frank, et al. chs 15-17) (2016-03-14 Mo)
- Lecture: Economic Growth in the Very Long Run (Read Bernanke, Frank, et al. ch 18) (2016-03-16 We)
- Over Spring Vacation: read Tom Slee, Nobody Makes You Shop at Wal-Mart and Milton Friedman and Rose Director Friedman, Free to Choose (2016-03-17 Th/-27 Su)
- Lecture: Saving, Investment, and Finance (Read Bernanke, Frank, et al. ch 19) (2016-03-28 Mo)
- Assignment: Short Paper due (2016-03-28 Mo/-29 Tu)
- Lecture: Money, Prices, and Banking (Read Bernanke, Frank, et al. ch 20) (2016-03-30 We)
- Lecture: Business Cycles (Read Bernanke, Frank, et al. ch 21) (2016-04-04 Mo)
- Assignment: Problem Set 6 due (2016-04-04 Mo/-05 Tu)
- Lecture: The Keynesian Approach (Read Bernanke, Frank, et al. ch 22) (2016-04-06 We)

Rough Course Schedule:

Macroeconomics II

- Lecture: The Federal Reserve and Monetary Policy (Read Bernanke, Frank, *et al.* ch 23) (2016-04-11 Mo)
- Assignment: Problem Set 7 due (2016-04-11 Mo/-12 Tu)
- 2016-04-13 We: Lecture: Aggregate Demand and Aggregate Supply (Read Bernanke, Frank, *et al.* ch 24)
- Lecture: Macroeconomic Policy (Read Bernanke, Frank, *et al.* ch 25) (2016-04-18 Mo)
- Assignment: Problem Set 8 due (2016-04-18 Mo/-19 Tu)
- Lecture: The International Economy (Read Bernanke, Frank, *et al.* ch 26) (2016-04-20 We)
- Lecture: What We Have Left Out of Macroeconomics (2016-04-25 Mo)
- Problem Set 9: International Economics due (2016-04-25 Mo/-26 Tu)
- FINAL REVIEW (2016-04-27 We)
- Section Review Meetings (2016-05-02 Mo/-06 Fr)
- 2016-05-09 Mo: FINAL EXAM

The Problem of Tom Slee...

- We will figure out what to do with the problem of Tom Slee...

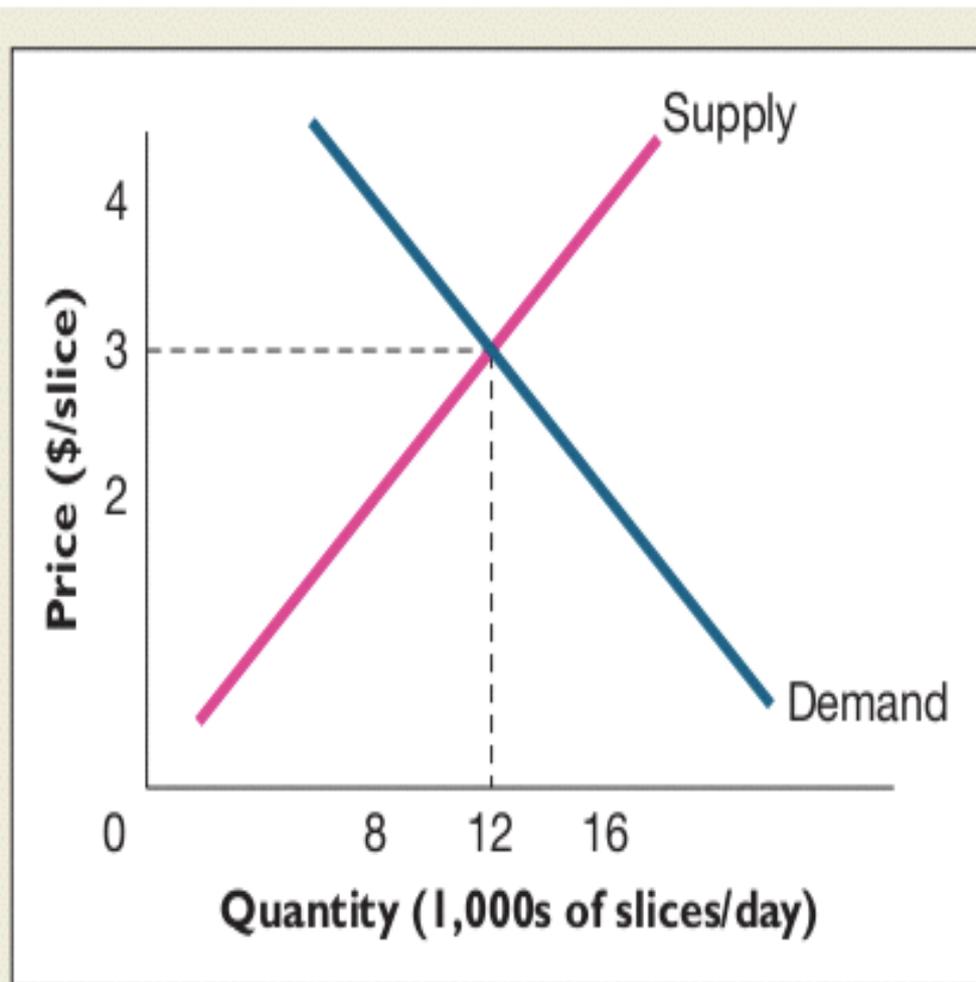
Supply and Demand Algebra

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See the Nice Straight-Line Supply and Demand Curves?

- They have nice equation representations
- This supply curve is:
 - $P = 0 + Q_s/4000$
 - Why write out the “0”? It is the *intercept* of the supply curve
 - It will in general not be 0
 - What is the $1/4000$? It is the *slope* of the supply curve

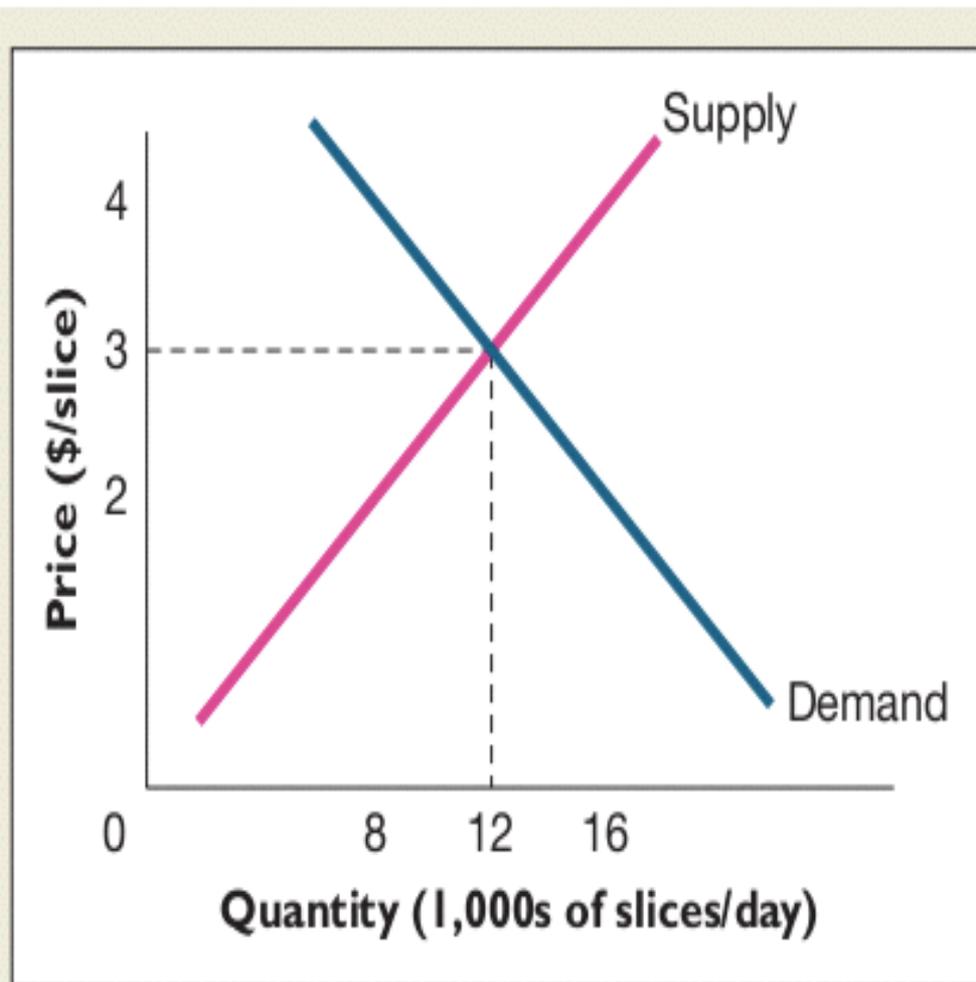
Frank-Bernanke Pizza Equilibrium



See the Nice Straight-Line Supply and Demand Curves?

- This demand curve is:
- $P = 6 - Q_d/4000$
 - The “6” is the *intercept* of the demand curve
 - The $1/4000$ is the *slope* of the demand curve.

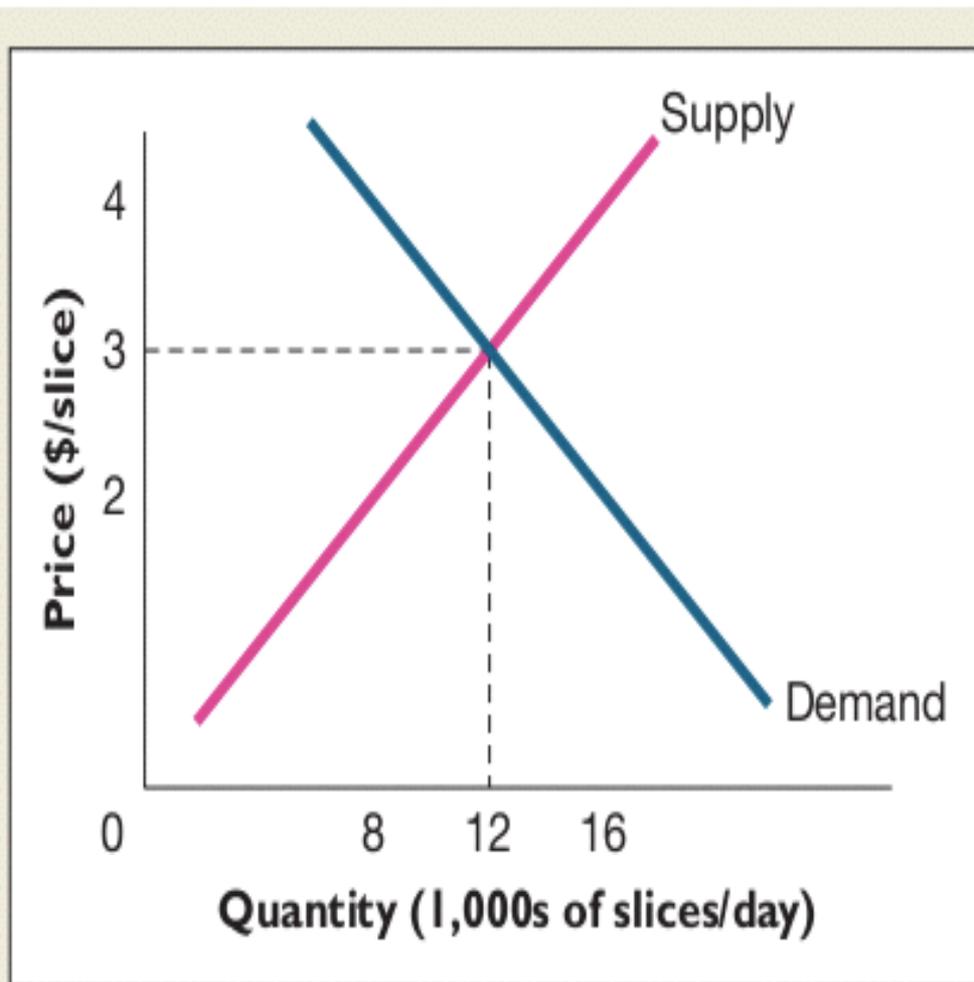
Frank-Bernanke Pizza Equilibrium



See the Nice Straight-Line Supply and Demand Curves?

- The supply intercept is the price just above which suppliers show up
- The supply slope is how much extra supply is called forth by a price \$1 higher.
- The demand intercept is the price above which zero is demanded
- The demand slope is how much extra demand is called forth by a price \$1 lowe

Frank-Bernanke Pizza Equilibrium



The Algebra of the Market

- Let's write supply: Frank-Bernanke Pizza Equilibrium

- $P = P_{s0} + s \times Q_s$

- (P_{s0} for the price at which supply is zero)

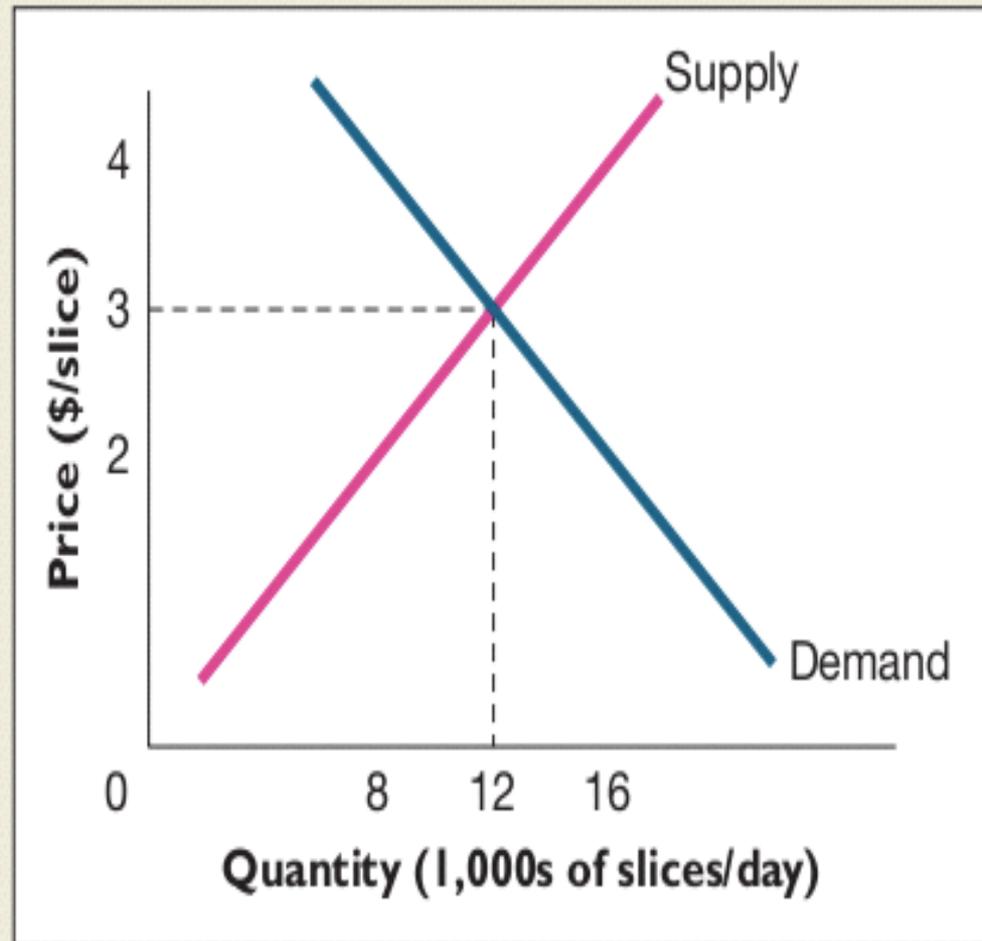
- s for the *supply* slope

- And demand:

- $P = P_{d0} - d \times Q_d$

- (P_{d0} for the price at which demand is zero)

- d for the *demand* slope



The Algebra of the Market II

- Then we can derive a simple formula for what the equilibrium price and quantity will be.
- Put the supply equation on the left and the demand equation on the right of the equals sign

$$- P = P_{s0} + s \times Q_s = P_{d0} - d \times Q_d$$

- Rearrange terms:

$$- s \times Q_s + d \times Q_d = (P_{d0} - P_{s0})$$

- Require that the quantities supplied and demanded be equal, and just call it Q:

$$- (s + d) \times Q = (P_{d0} - P_{s0})$$

The Algebra of the Market III

- Require that the quantities supplied and demanded be equal, and just call it Q :
 - $(s + d) \times Q = (P_{d0} - P_{s0})$
- And divide to solve for the equilibrium quantity
 - $Q = (P_{d0} - P_{s0}) / (s + d)$
 - Take the difference of the intercepts—the price at which zero is demanded and the price at which zero is supplied—and divide by the sum of the slopes. That's the quantity at equilibrium.

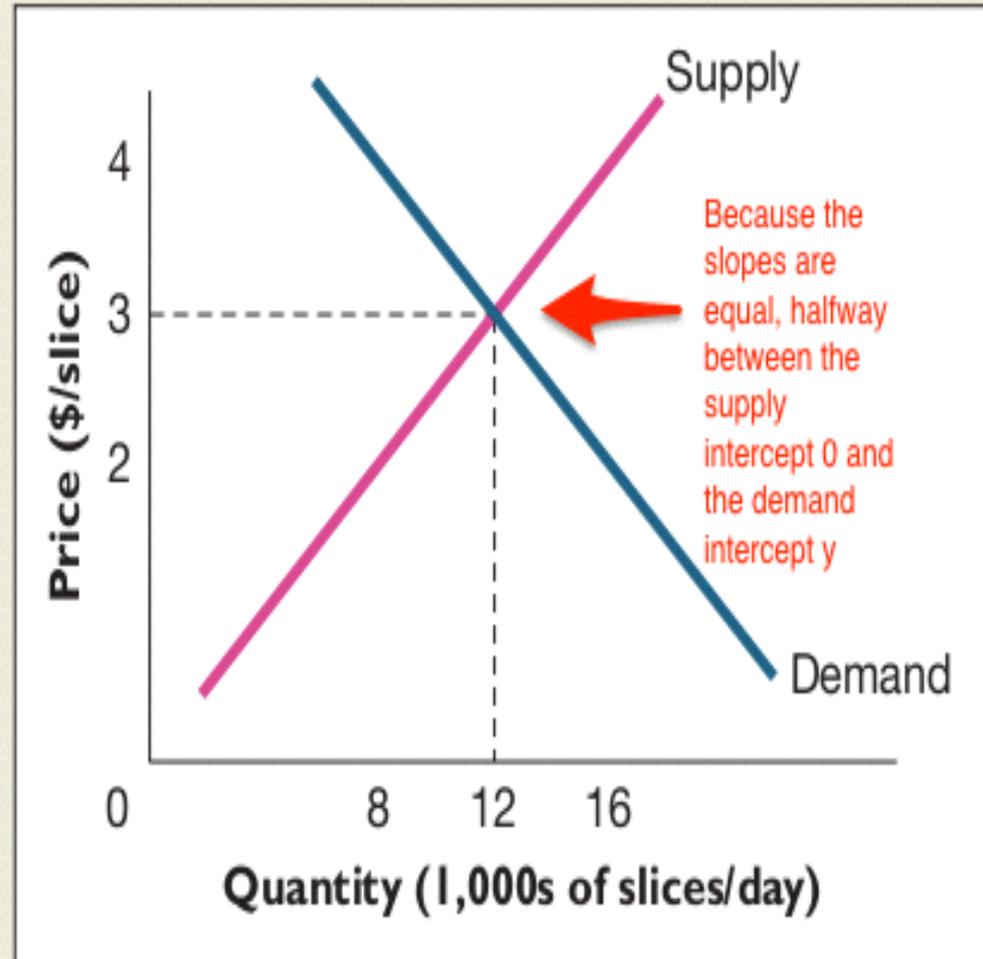
The Algebra of the Market IV

- Take the equilibrium quantity Q
- Then use that Q to solve for the equilibrium price in either the supply or the demand equation:
 - $P = P_{s0} + s \times [(P_{d0} - P_{s0}) / (s + d)]$
 - $P = [d / (s + d)] \times P_{s0} + [s / (s + d)] \times P_{d0}$
 - Take the supply intercept and the demand intercept by the ratio of the two slopes of the supply and the demand curve.
 - And that will be the equilibrium price.

The Algebra of Market Equilibrium V

- Here, the slopes are equal in magnitude
- Thus the equilibrium price is halfway between the supply and demand intercepts
- If one of the curves were flatter—more elastic—the equilibrium price would be closer to that equation's intercept
- That side of the market would have less pricing power...

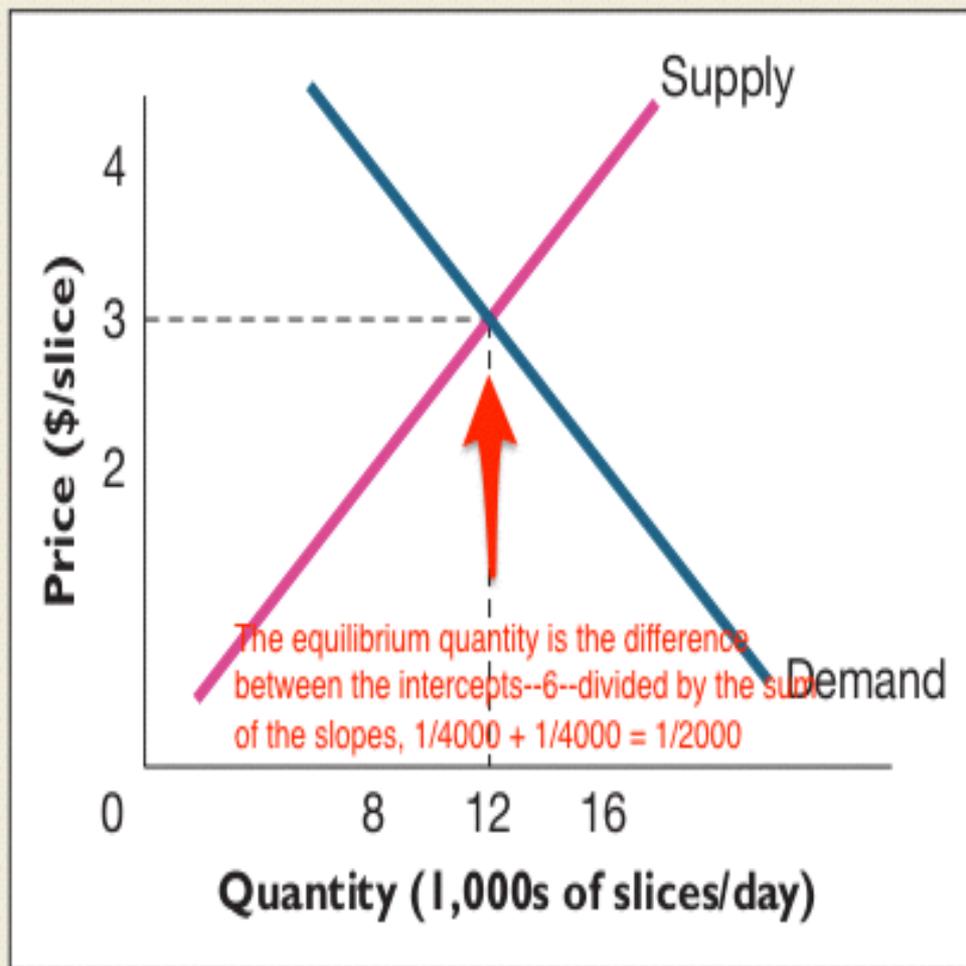
Frank-Bernanke Pizza Equilibrium



The Algebra of Market Equilibrium VI

- The sum of the slopes is $1/4000 + 1/4000 = 2/4000$
- The difference in the intercepts is $6 - 0 = 6$
- The equilibrium quantity is the first divided by the second:
 12000

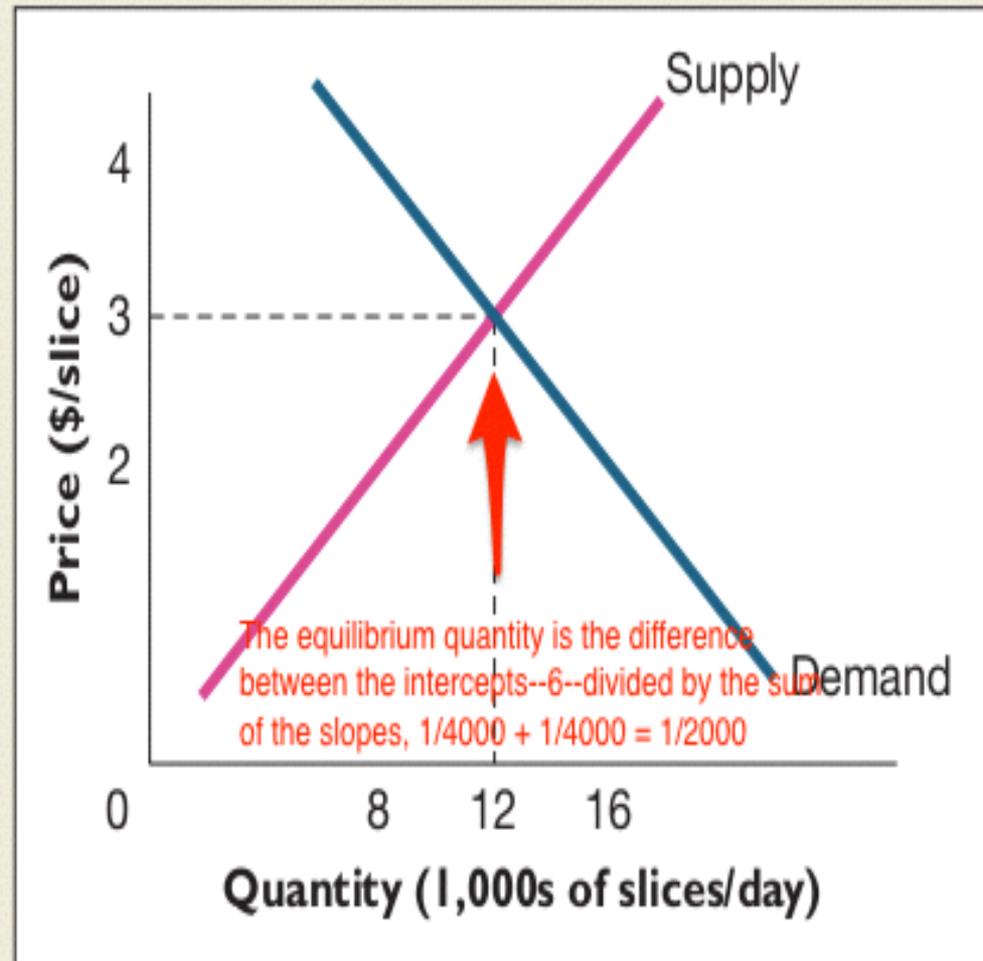
Frank-Bernanke Pizza Equilibrium



THIS ONLY WORKS FOR LINEAR DEMAND AND SUPPLY CURVES!!

- Only if both curves are linear—an intercept, a slope, and nothing else—can you write:
- $Q = (P_{d0} - P_{s0}) / (s + d)$
- $P = [d / (s + d)] P_{s0} + [s / (s + d)] P_{d0}$
- But if you do have linear demand and supply curves, it is a useful shortcut

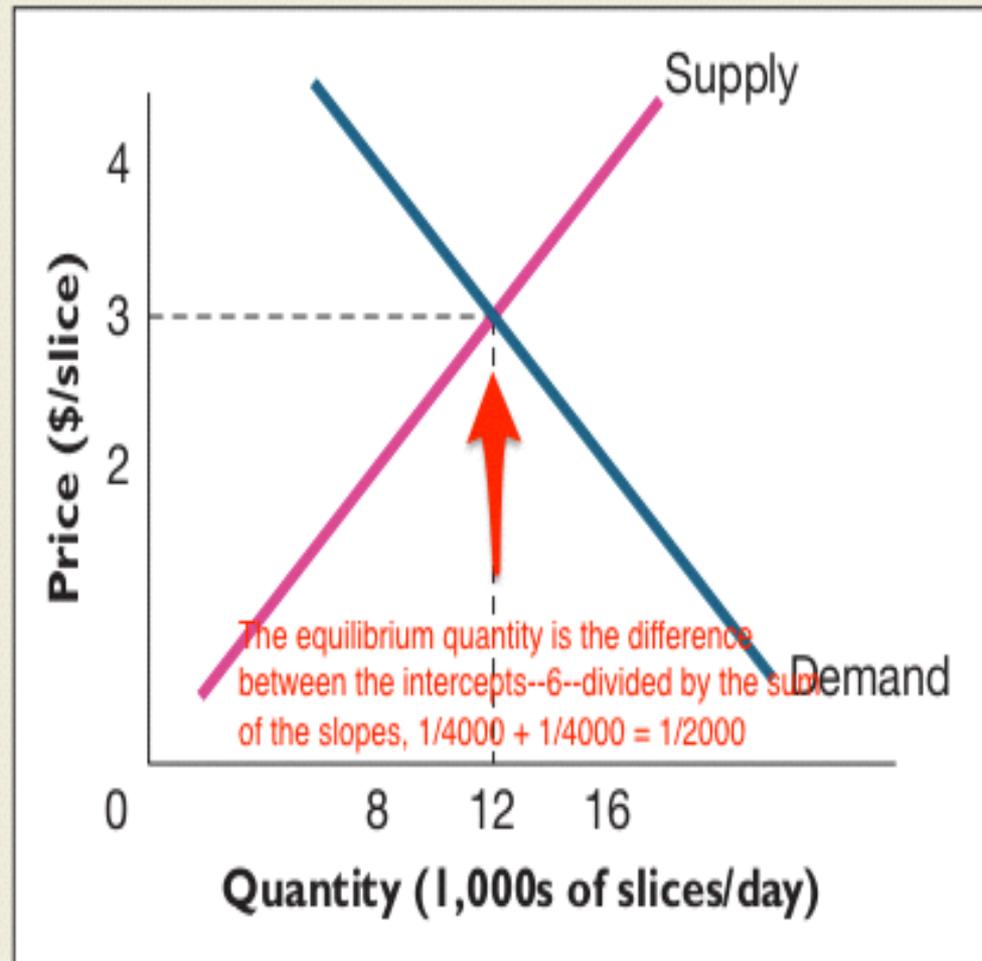
Frank-Bernanke Pizza Equilibrium



Where the Curves Cross...

- ...if both the supply and demand curves are satisfied...
- ...when there are no dissatisfied buyers who wish to buy at the market price but can't find a seller...
- ...and no dissatisfied sellers who find themselves unable to find a buyer at the market price...
- ...we say the market is "in equilibrium"...
- and we economists look well-nigh exclusively at such "equilibria"

Frank-Bernanke Pizza Equilibrium

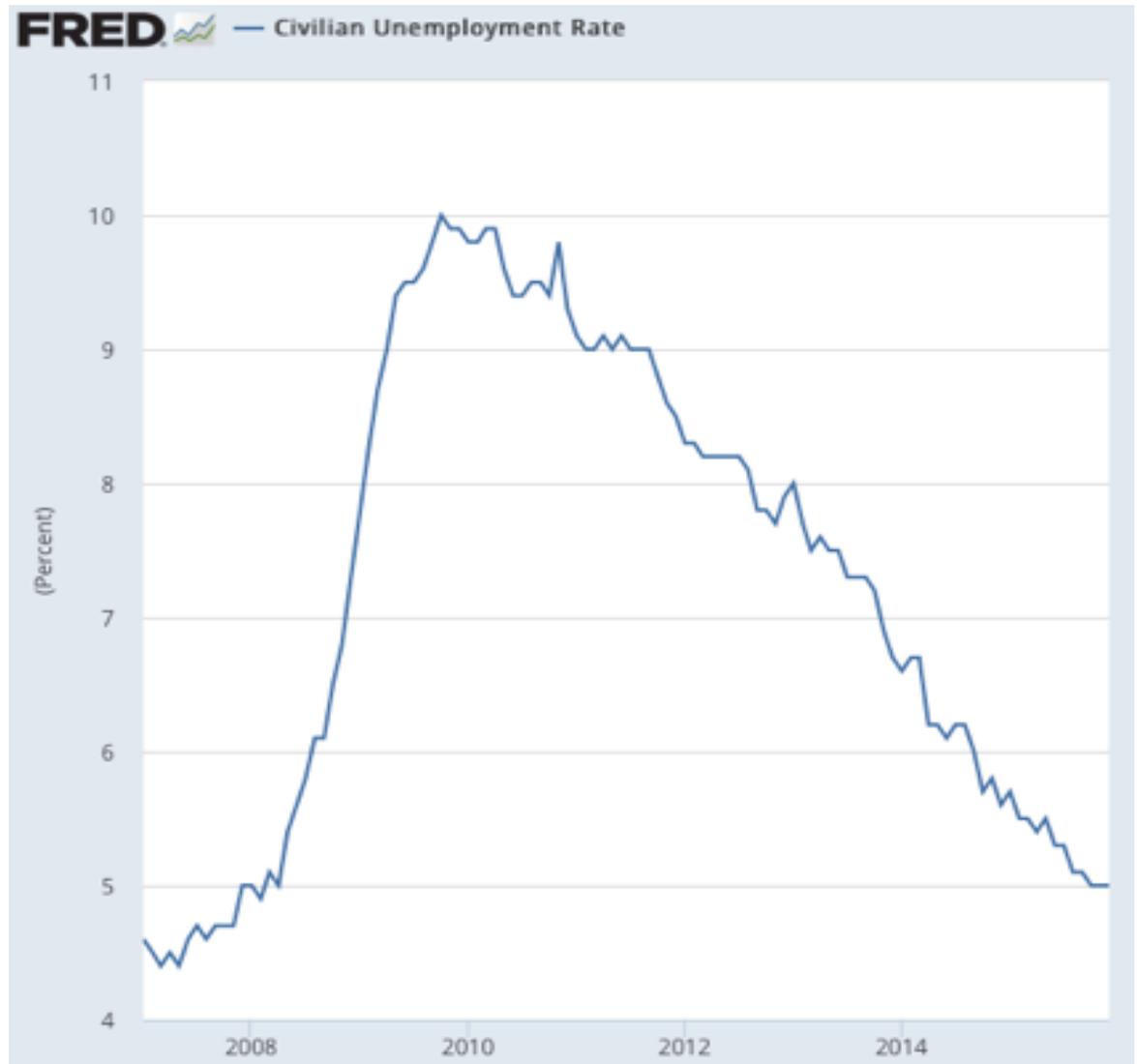


Assumption: The Market Will Not Stay Out of “Equilibrium” Long

- If there are sellers who cannot find buyers at the current price, then:
 - Some sellers will give up in disgust, and supply will shrink
 - Buyers will notice that there are extra sellers, and cut the price they offer to pay
 - This process will work itself out quickly
- If there are buyers who cannot find sellers at the current price, then:
 - Some buyers will give up in disgust, and demand will shrink
 - Sellers will notice that there are extra buyers, and raise the price they demand
 - This process will work itself out quickly

Does It?

- The American labor force is made up of people at work or actively looking for work
- The proportion of that labor force that was unemployed at the start of 2007 was 4.5%
- It jumped up to 10% by the start of 2010.
- It has just gotten back to 5%—that's six years



And What If There Is More than One Equilibrium?

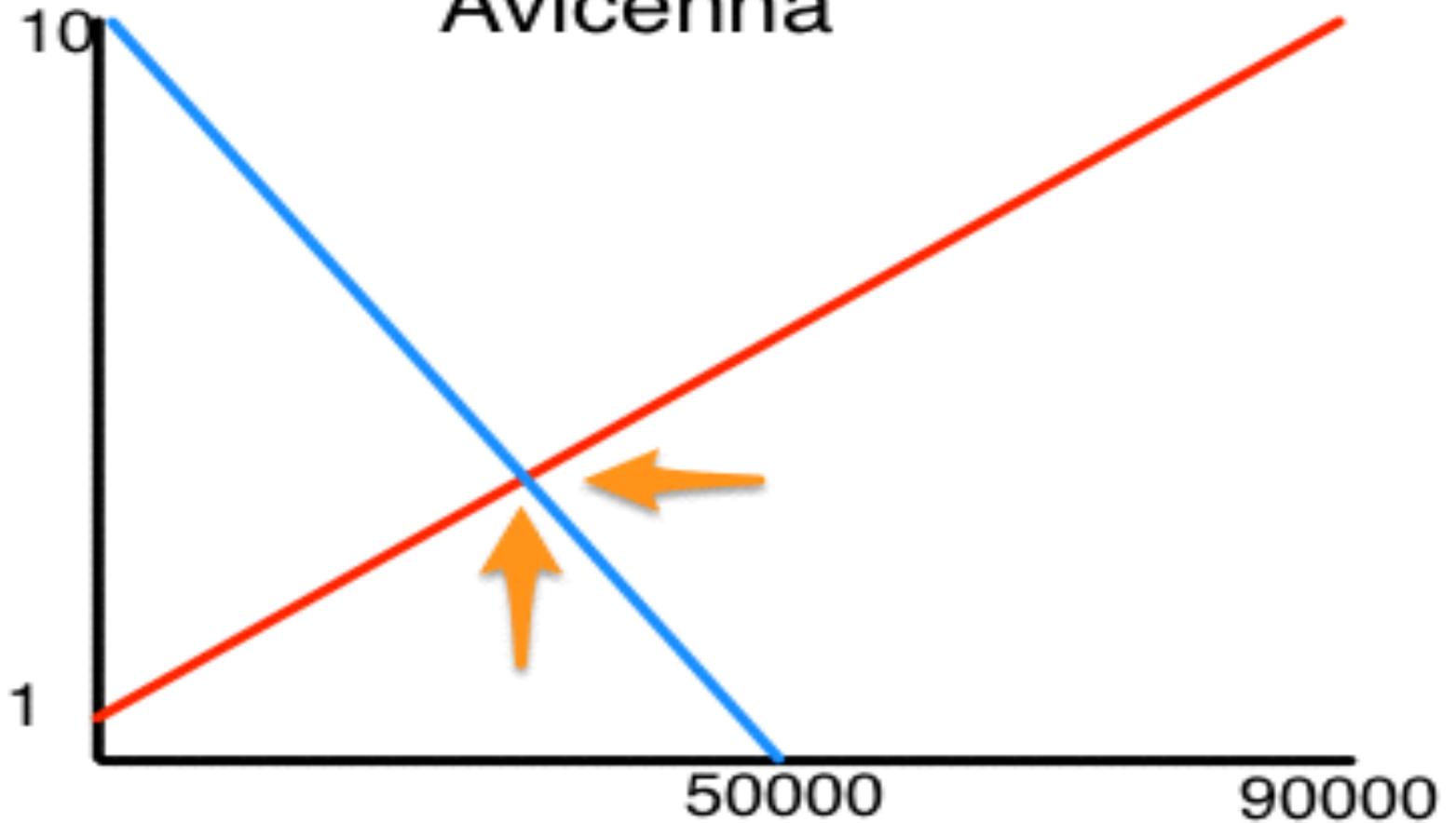
- There is no rule that there cannot be two, three, or more...
- How does the economy choose?
- These are sticky and knotty questions
- We will ignore them until just before spring break
- We will assume, until then, that markets converge quickly enough to a single, stable equilibrium
- We will assume that we do not have to worry about:
 - Markets that do not clear
 - Producers with unsold products
 - Consumers with unspent money
- But this is an *assumption* only...

Surplus

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Consider a Market in Equilibrium

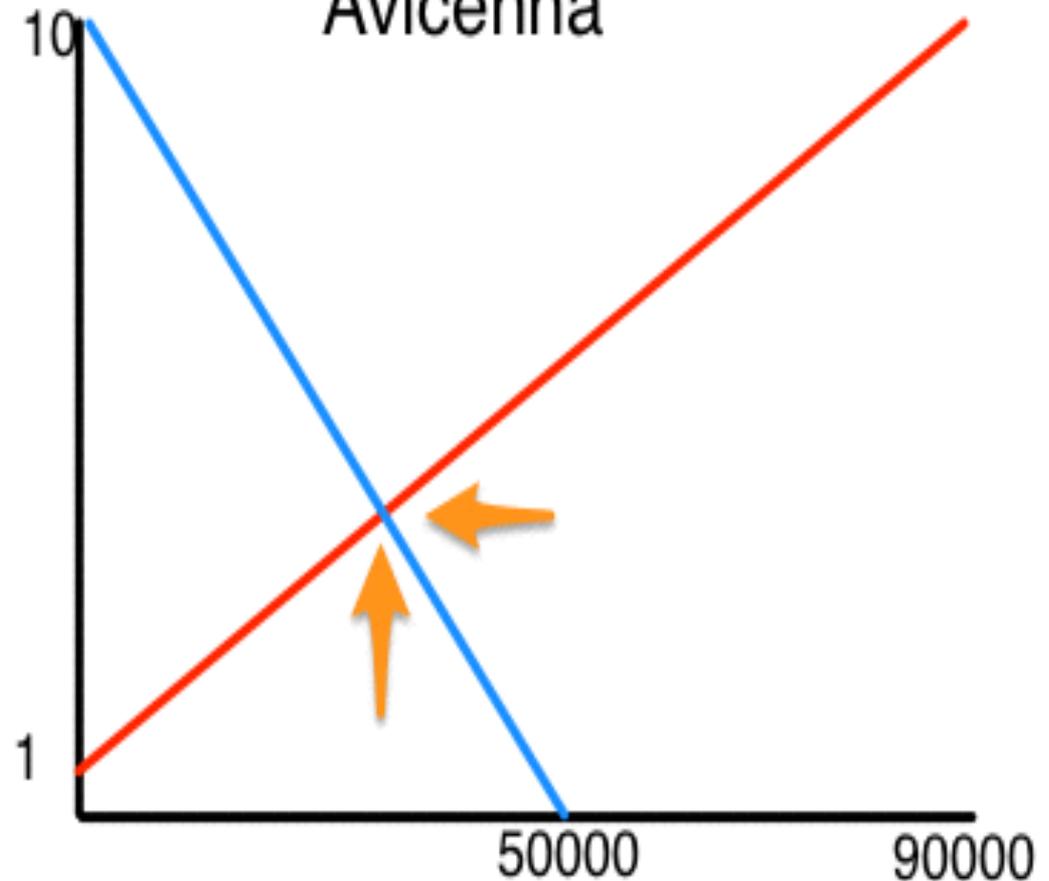
Supply and Demand for Lattes in Avicenna



Consider a Market in Equilibrium II

- Supply Curve:
 - $P = P_{s0} + sQ_s$
 - $P = 1 + 0.0001Q_s$
- The minimum opportunity cost of the supplier with the greatest comparative advantage is \$1/latte
- A \$1/latte price increase is needed to call forth an extra 10,000 in supply

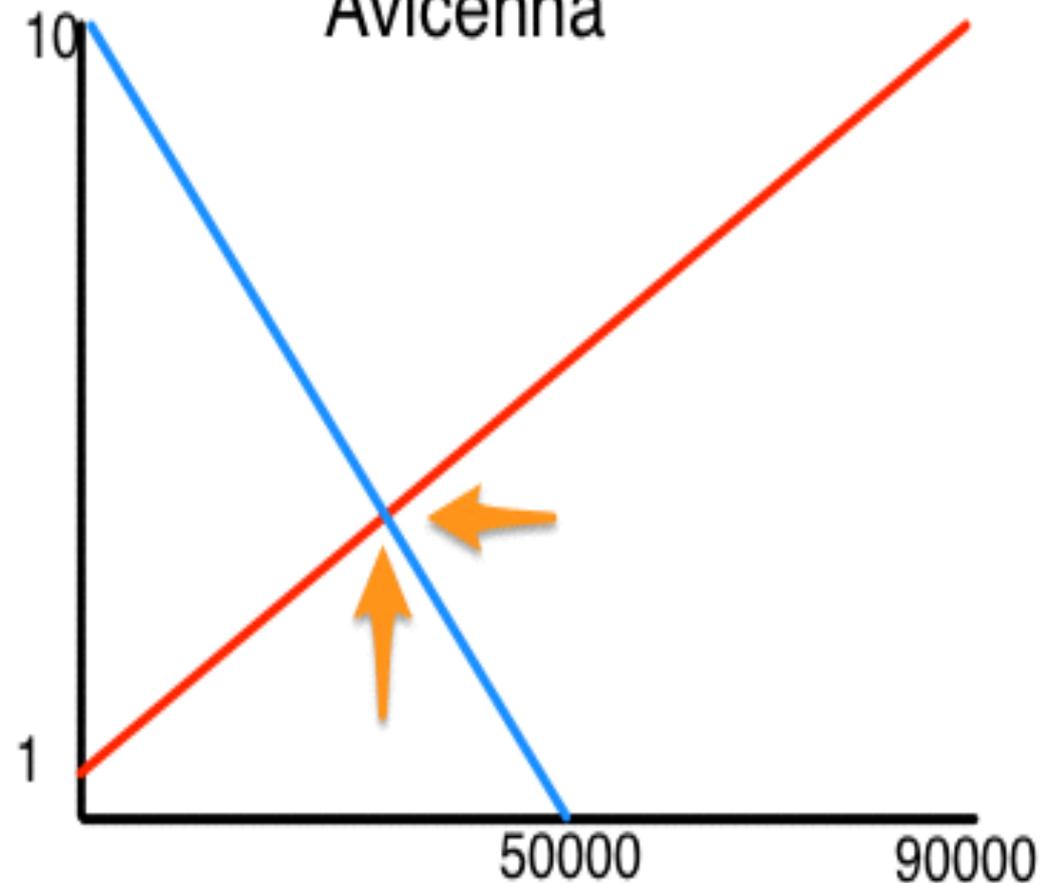
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A Market in Equilibrium III

- Supply Curve:
 - $P = P_{s0} + sQ_s$
 - $P = 1 + 0.0001Q_s$
- Demand Curve:
 - $P = P_{d0} - dQ_d$
 - $P = 10 - 0.0002Q_d$
- The greatest willingness-to-pay is \$10/latte
- Each \$1/latte price decline calls forth demand for an extra 5,000 lattes

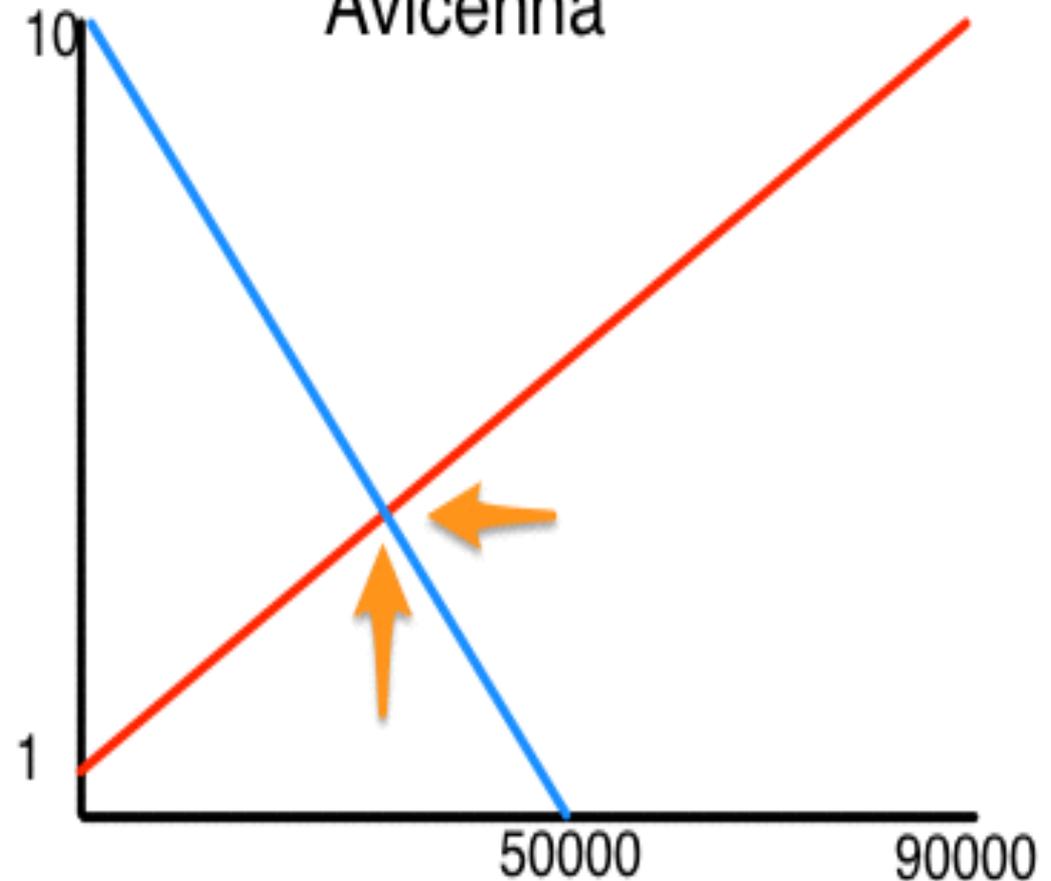
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A Market in Equilibrium IV

- Supply Curve:
 - $P = P_{s0} + sQ_s$
 - $P = 1 + 0.0001Q_s$
- Demand Curve:
 - $P = P_{d0} - dQ_d$
 - $P = 10 - 0.0002Q_d$
- Equilibrium:
 - $P = \$4$
 - $Q = 30000$
- No unsatisfied buyers or sellers

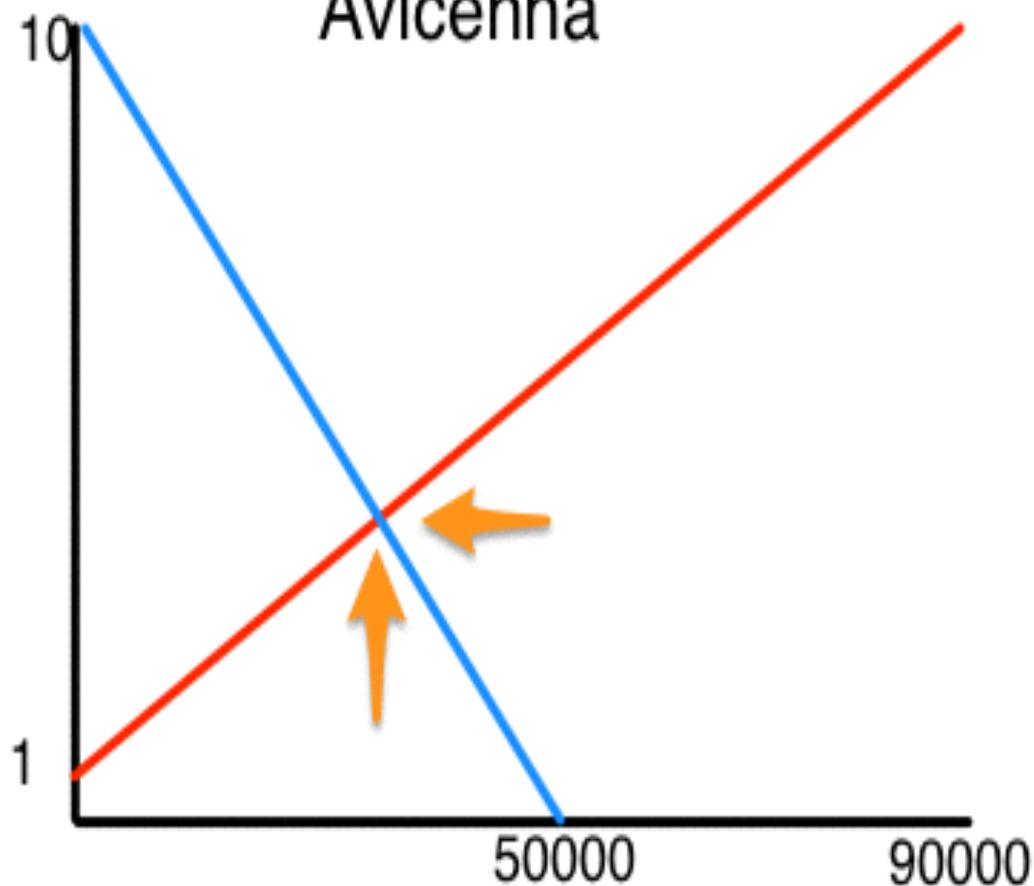
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How Happy Are Consumers with the Deals They Get?

- SUPPLY: $P=1+0.0001Q_s$
- DEMAND:
 $P=10-0.0002Q_d$
- Equilibrium:
 - $P = \$4$
 - $Q = 30000$
- The first latte is bought by someone who has an opportunity cost of 10 and pays a price of \$4
 - The opportunity to buy is thus worth \$6 to him or her

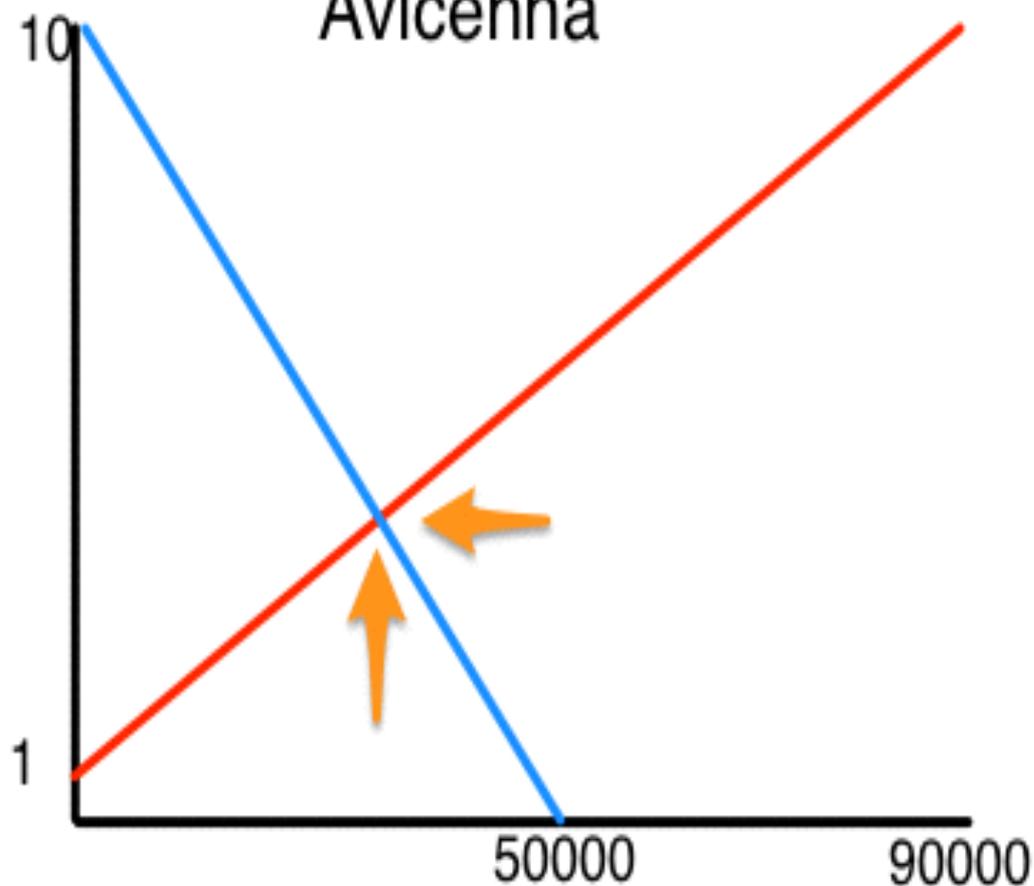
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How Happy Are Consumers with the Deals They Get? II

- SUPPLY: $P=1+0.0001Q_s$
- DEMAND:
 $P=10-0.0002Q_d$
- Equilibrium:
 - $P = \$4$
 - $Q = 30000$
- The first latte is bought by someone who has a willingness to pay of \$10 and pays a price of \$4
 - The opportunity to buy is thus worth \$6 to him or her

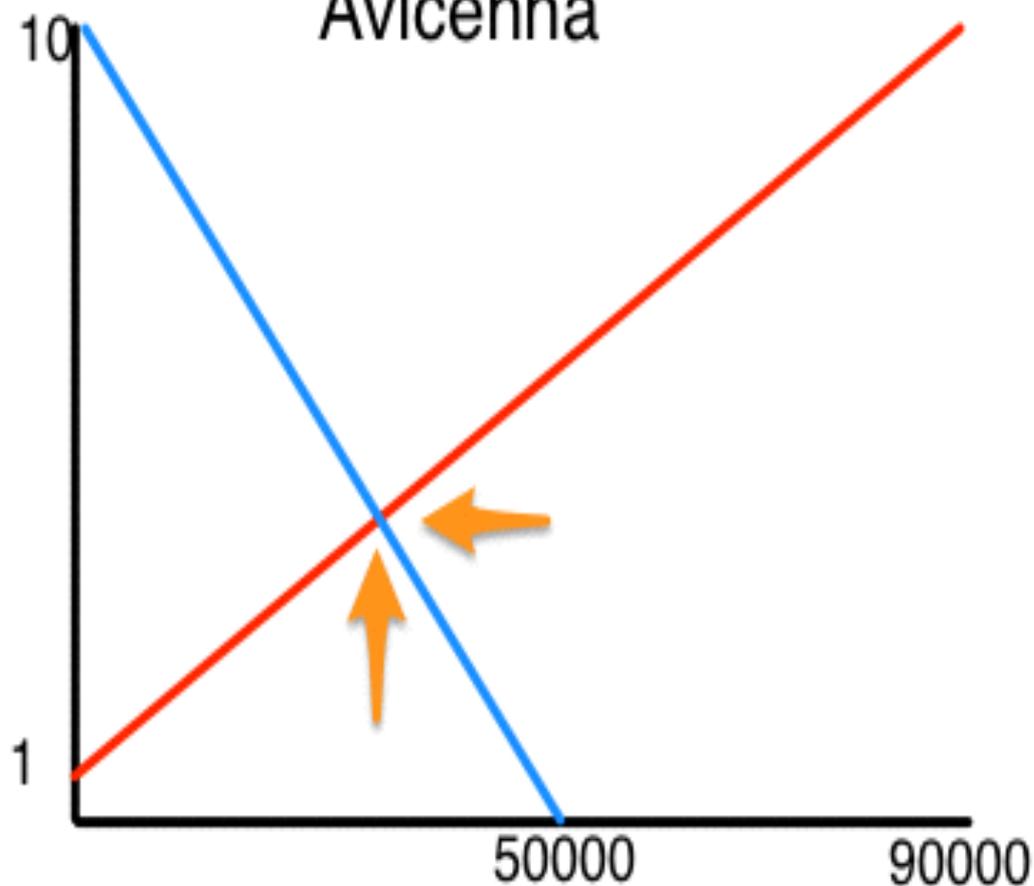
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How Happy Are Consumers with the Deals They Get? III

- SUPPLY: $P=1+0.0001Q_s$
- DEMAND:
 $P=10-0.0002Q_d$
- Equilibrium:
 - $P = \$4$
 - $Q = 30000$
- The last latte — number 30000—is bought by someone who has a willingness to pay of \$4 and pays a price of \$4
 - The opportunity to buy is thus worth \$0 to him or her

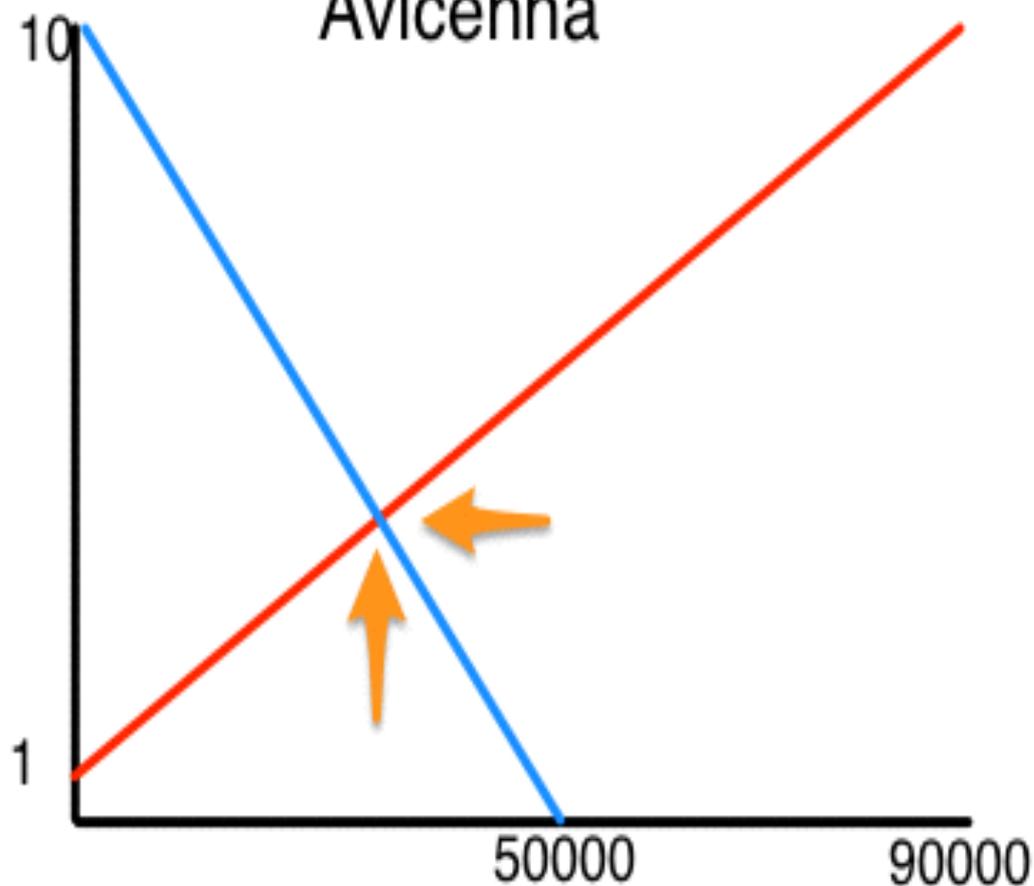
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How Happy Are Consumers with the Deals They Get? IV

- SUPPLY:
 $P=1+0.0001Q_s$
- DEMAND:
 $P=10-0.0002Q_d$
- Equilibrium:
 - $P = \$4$; $Q = 30000$
- For this pair of lattes—the first and the last—the excess of willingness-to-pay over cost is \$6

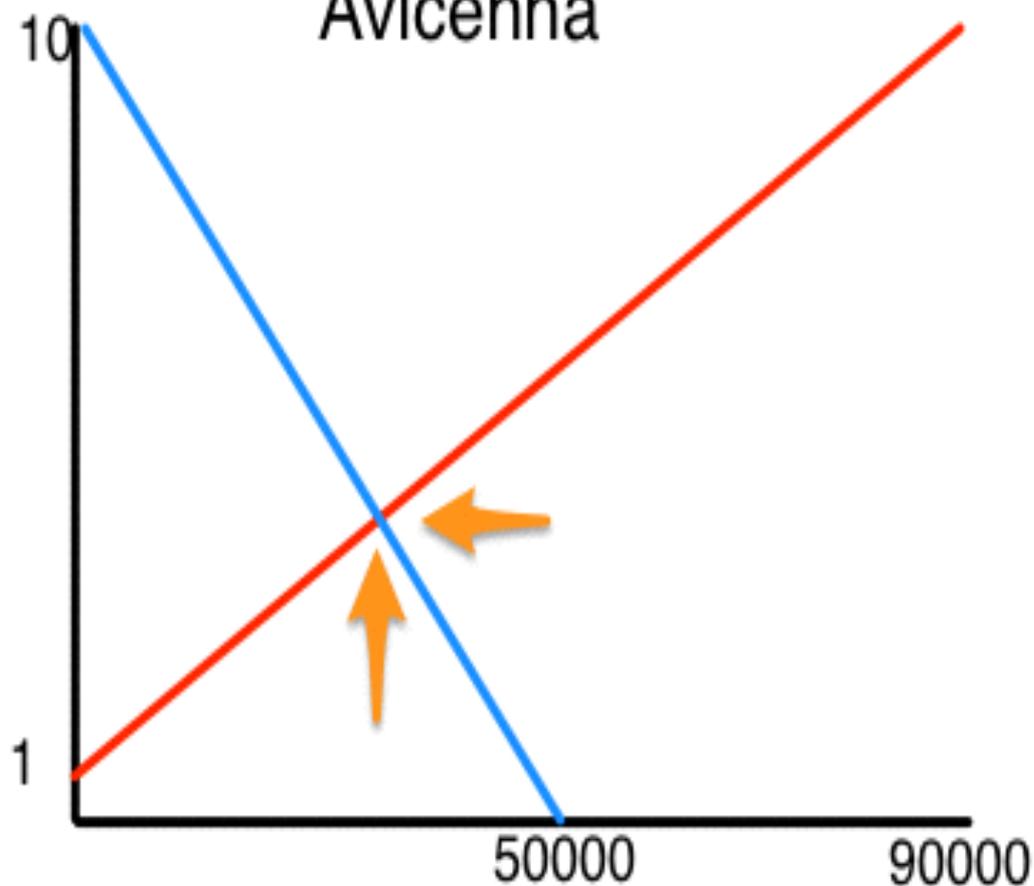
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How Happy Are Consumers with the Deals They Get? V

- SUPPLY: $P=1+0.0001Q_s$
- DEMAND: $P=10-0.0002Q_d$
- Equilibrium:
 - $P = \$4$; $Q = 30000$
- For the next pair of lattes—the second and the second-to-last:
 - The willingness-to-pay of the second purchaser is $\$10-0.0002= \9.9998
 - The willingness-to-pay of the second-to-last purchaser is $\$4+0.0002= \4.0002
- Their total willingness-to-pay is $\$14$. Their total cost is $\$8$. Their surplus is $\$6$

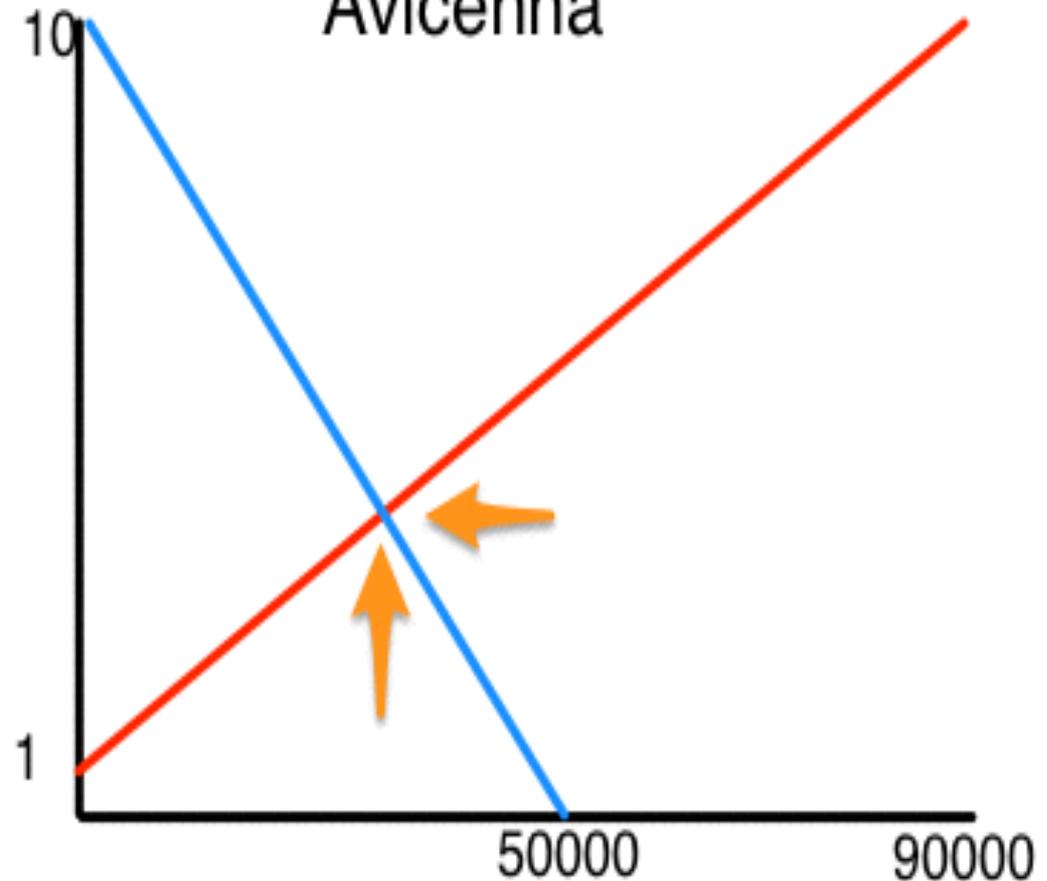
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How Happy Are Consumers with the Deals They Get? V

- SUPPLY: $P=1+0.0001Q_s$
- DEMAND: $P=10-0.0002Q_d$
- Equilibrium:
 - $P = \$4$; $Q = 30000$
- For every single pair of purchasers:
- Their total willingness-to-pay is \$14. Their total cost is \$8. Their surplus is \$6
- That is true for all 15,000 purchaser-pairs
- Hence the surplus for consumers—the consumer surplus, the CS—is $\$6 \times 15,000 = \$90,000$

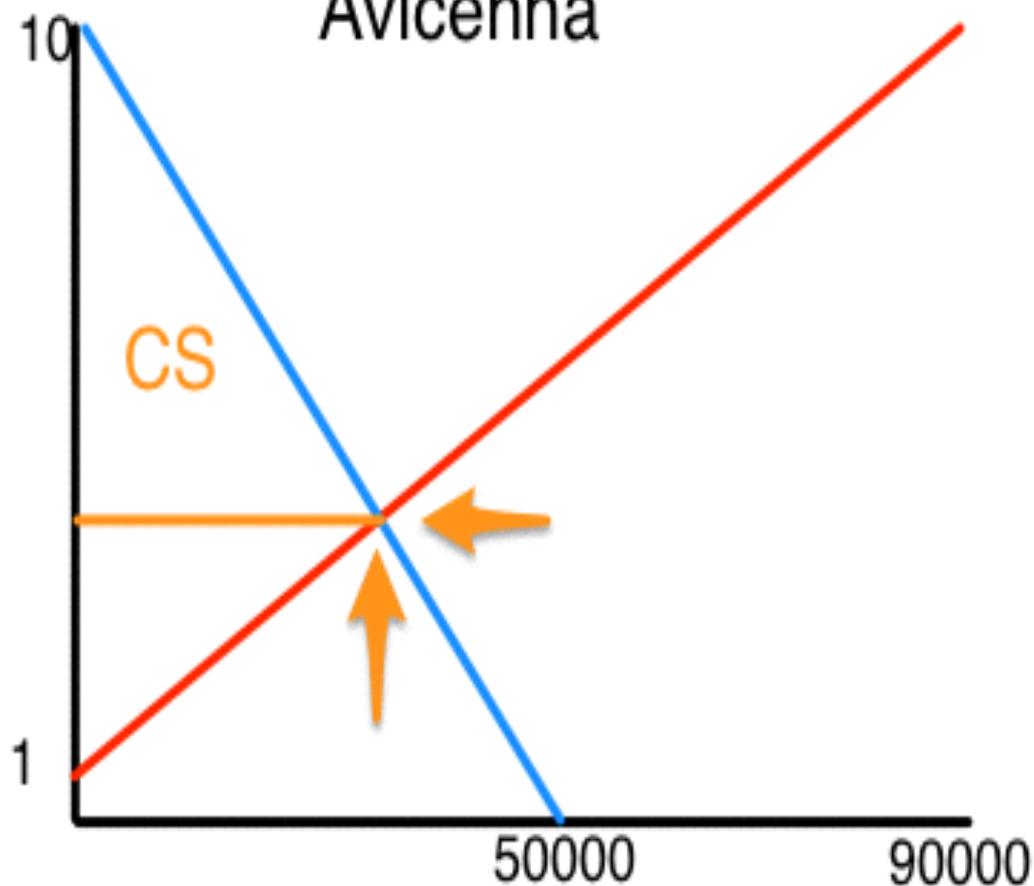
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How Happy Are Consumers with the Deals They Get? VI

- SUPPLY: $P=1+0.0001Q_s$
- DEMAND:
 $P=10-0.0002Q_d$
- Equilibrium:
 - $P = \$4$; $Q = 30000$
- The surplus for consumers—the consumer surplus, the CS—is $\$6 \times 15,000 = \$90,000$
- That is the area of the triangle labeled “CS”:
 - Height of 6, base of 30000, and it’s a triangle

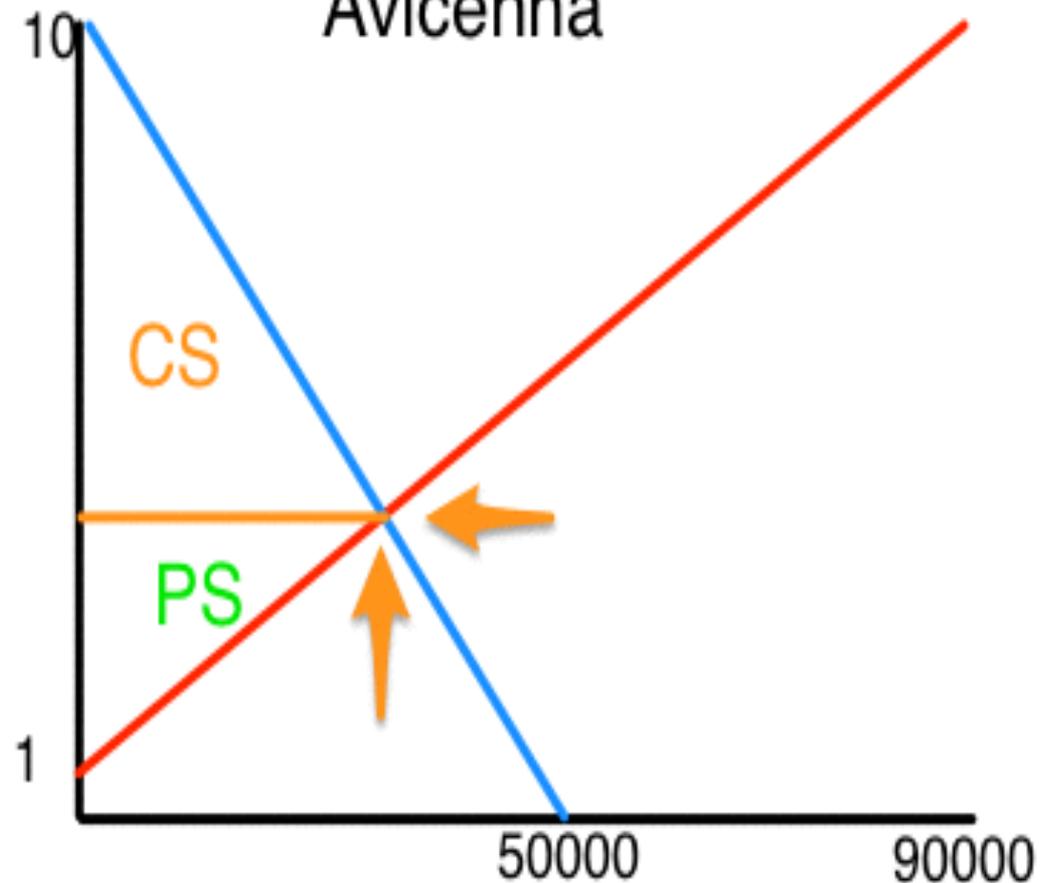
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How Happy Are the Producers with the Deals They Get?

- SUPPLY: $P=1+0.0001Q_s$
- DEMAND: $P=10-0.0002Q_d$
- Equilibrium:
 - $P = \$4$; $Q = 30000$
- We could run through the same argument for producers, substituting “opportunity cost” for “willingness to pay”
- We would reach the conclusion that the surplus to producers is $\$3 \times 30000 \times 1/2 = \45000
- That is the area of the triangle labeled “PS”

Supply and Demand for Lattes in Avicenna



Total Surplus

- Total Surplus = Consumer Surplus + Producer Surplus
- $TS = CS + PS$
- $TS = \$90000 + \$45000 = \$135000$
- How come consumers get 2/3 of the surplus?

