Differentiation Principles

Competitive Strategy, Lecture 5

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Spring 2021

Overview of Today

- Games with Names
  - Cournot
  - Bertrand
  - Hotelling
  - Salop

Cournot Competition

- Shrimp Game is similar to Cournot competition
  - The original model (1838) was for mineral water
  - ... selling water isn't new!
- Compete on quantities
- Incentives to produce more than monopoly
  - ... but less than Perfect Competition
  - ... still have profits in equilibrium

Bertrand Competition

- Compete on prices
- Setup
  - Demand is $d(p)$, consumers go to lowest price
  - Profits are $(p - c) * d(p)$ if you price lower, and 0 otherwise
  - (Can split if there's a tie)
- Equilibrium
  - Competitive $p^* = c$
  - Can either firm do better?
    - Increase price, still get 0 since no customers
  - What about a higher price NE?
    - Undercut rival's price and steal all the market

Worked Example

- $d(p) = 100 - 20p$, $c = 1$
- $p^* = c = 1$ is a NE by the same logic
- What about a higher price?
  - Suppose we both plan on charging 2
    - If successful, we split $(2-1) * (100-40) = 60$ for 30 each
  - Incentive to defect
    - If I charge e.g. 1.5, I get $(1.5-1) * (100-30) = 35$
  - Turtles all the way down

Product Differentiation Strategy

- OK, so price competition is brutal
  - Could cooperate/collude, though difficult/illegal..
  - Alternative: differentiate yourself!
    - Value creation and value capture framework
    - (Business strategy to fit the differentiation)
    - The 3 Questions of positioning

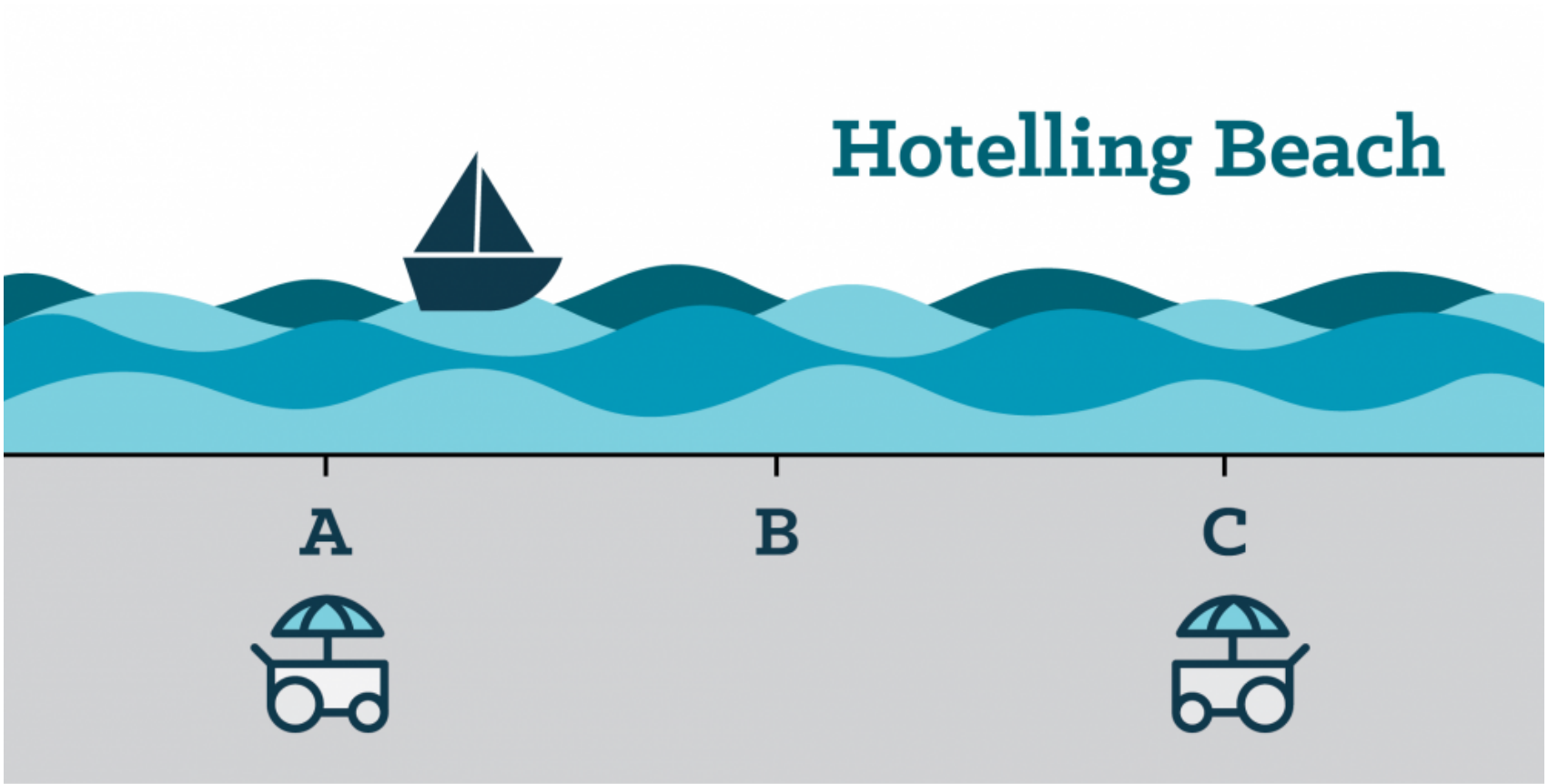
Types of Product Differentiation

- Horizontal
  - Consumers differ in their ranking of goods with same price
- Vertical
  - Consumers all rank identically with same pric
  - Becomes horizontal if you think about quality-price tradeoff
- Would you pay $5 for a latte?
  - SBUX vs Intelligentsia?
  - Bridgeport? Metropolis? Dark Matter?

Hotelling Line Model

- Vendors on a boardwalk setup
  - Boardwalk line of length 10
  - Consumers spread out evenly, go to nearest vendor for water

Minimal Differentiation Principle



Easier Than the 1929 Original

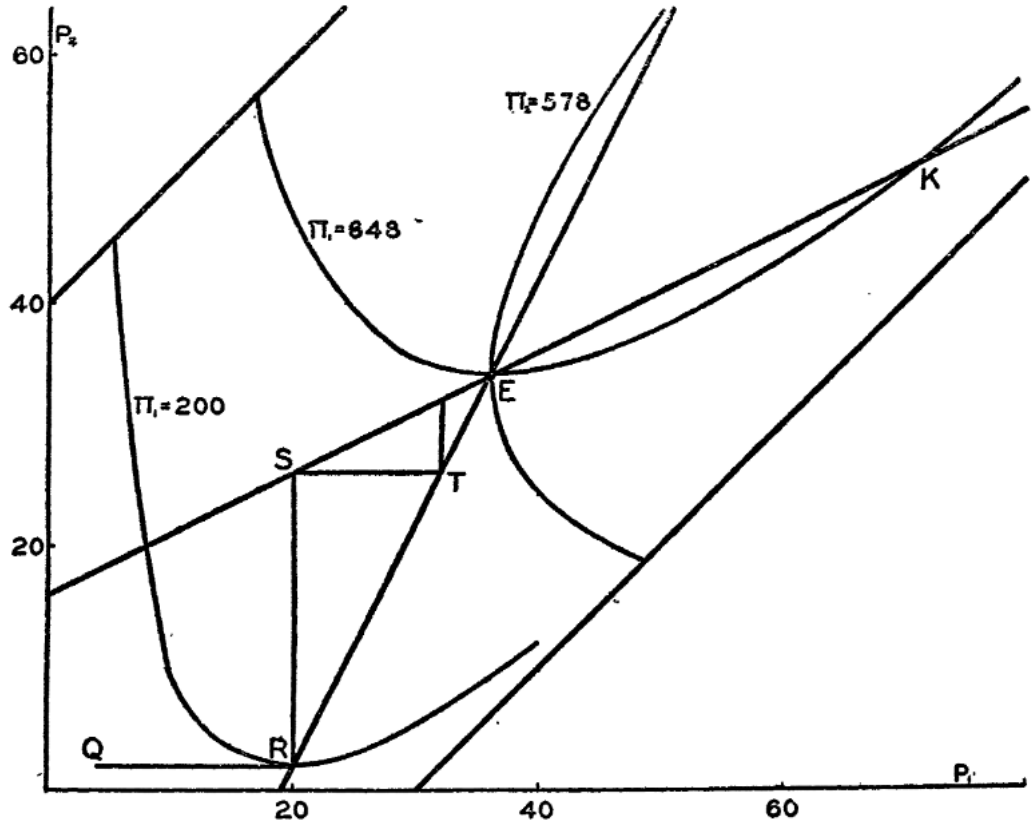


FIG. 2.

Conditions of competition for the market of Fig. 1. The co-ordinates represent the prices at A's and B's shops for the same article. The straight lines through E are the two lines of maximum profit. On one of the curves through E, A's profit is everywhere 648; on the other, B's is 578. The lower curve is the locus on which A's profit is 200.

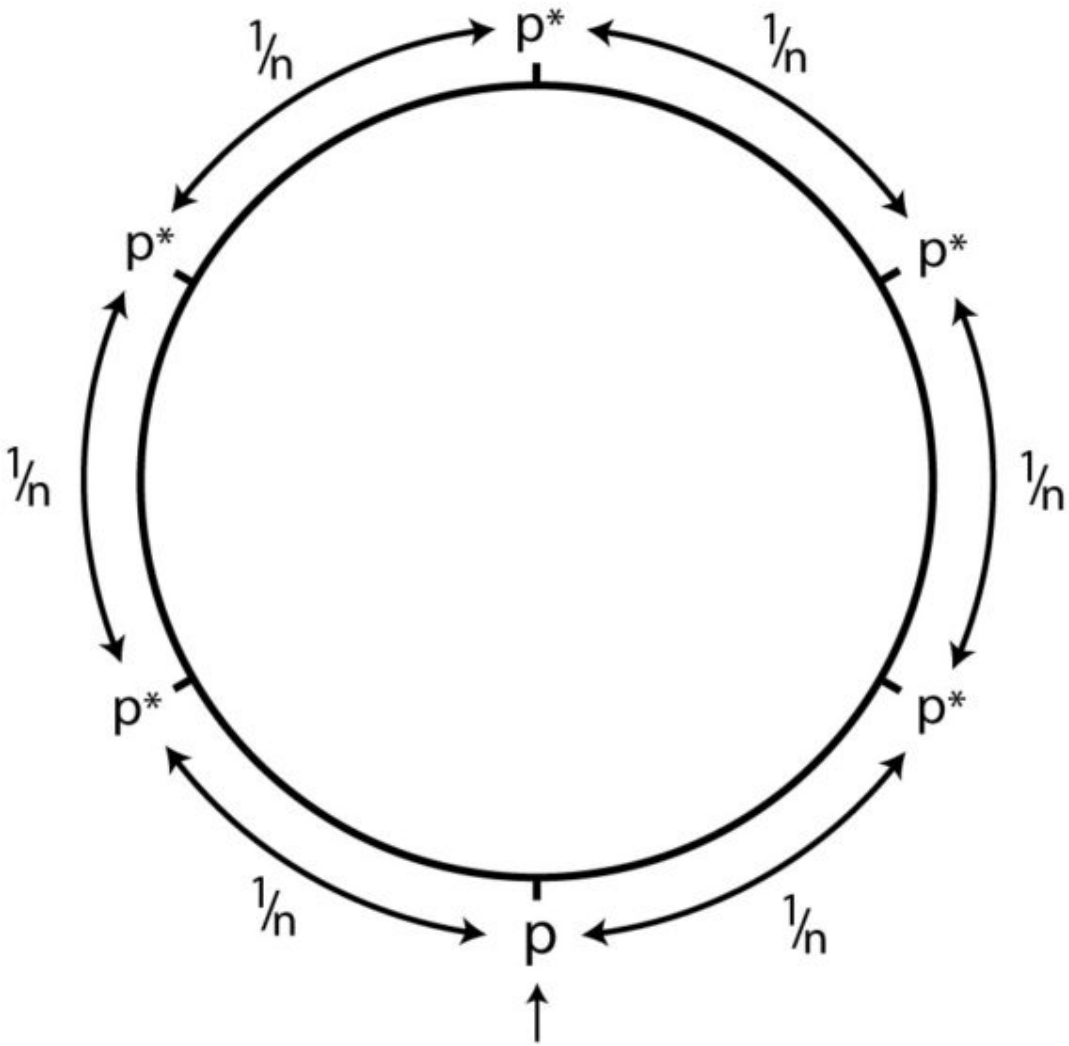
Hotelling Discussion

- Same result as homogenous Bertrand!
- Applies to other areas: Median Voter Theorem
- Is this what we see in the real world?

Salop Circle Model

- Circle city of circumference 10
- Consumers spread out evenly, go to nearest vendor for water
  - Consumers incur a small travel cost per distance traveled

Maximal Differentiation Principle



Salop Discussion

- Small change completely flips the result!
- What's the key difference?
  - Two sides to the location effect
  - Consider if firms already located at Hotelling endpoints
  - What if you could 'push' them out?
  - Strategic interaction is key!
- Similar results in Hotelling by allowing price AND location choice

Vice Example 1: Gambling

Table 2

Statistical Properties of Select Casino Games and Devices

(assuming an initial wager of 1 unit)

Game	*House Advantage*[d]	*Standard Deviation (One Wager)*[d]	*Standard Deviation (1,000 Wagers)*[d]	*Standard Deviation (House Advantage after 1,000 Wagers)*[d]
Craps[a]	1.41%	1.0	31.6	3.16%
Blackjack[b]	0.50%	1.1	34.8	3.48%
Roulette (American)[c]	5.26%	5.7	179.8	17.98%
Roulette (European)[c]	2.70%	5.8	182.1	18.21%
Baccarat[a]	1.25%	1.0	31.6	3.16%
Pai Gow Poker[b]	2.50%	1.0	31.6	3.16%
Video Poker[b,e]	2%	2.3	73.7	7.37%
Slot Machines[e]	5%	10.6	335.2	33.52%
Keno	28%	42.3	1,336.3	133.63%

[a] Standard wager.
[b] Assumes the player plays optimal strategy with typical house rules.
[c] Single number wagers.
[d] Approximate.
[e] Typical.

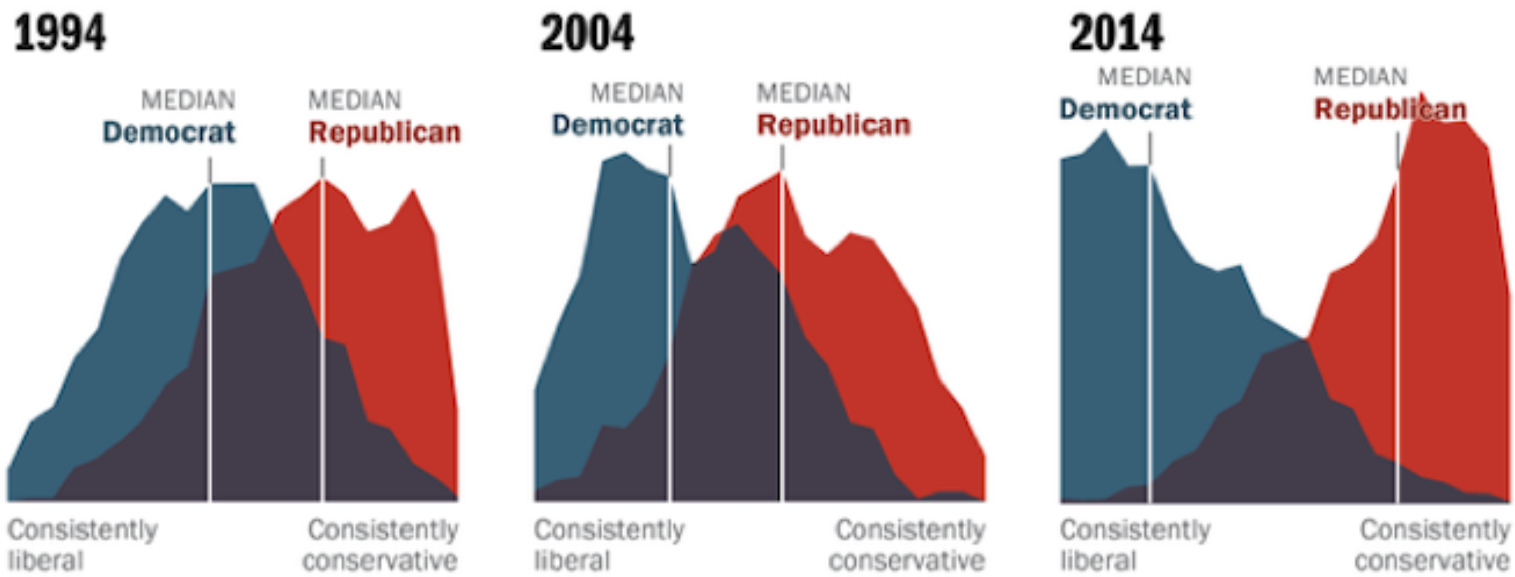
Vice Example 2: Beer

Table 2. Ratings Dispersion and Sales Growth

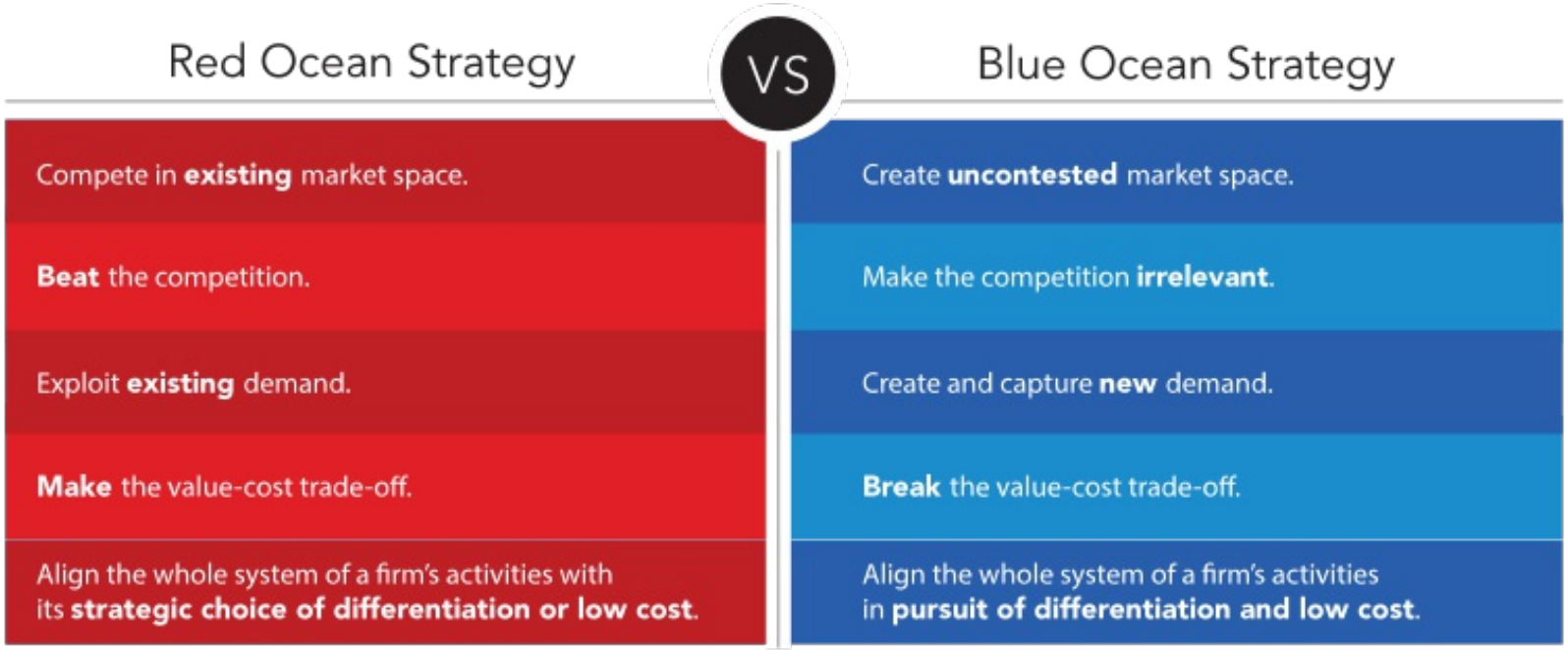
	Sales growth	
	Original value	Standardized
SD_Ratings	0.156***	0.0304***
	(0.0564)	(0.0110)
Mean_Ratings	0.0900***	0.0341***
	(0.0299)	(0.0113)
Log_Count_Ratings	0.00489	0.00791
	(0.0098)	(0.0158)
Log_Sales	0.0171	0.0242
	(0.0098)	(0.0138)
Young	0.159***	0.159***
	(0.0567)	(0.0567)
Middle	0.0941***	0.0941***
	(0.0228)	(0.0228)
Controls	Year	Year
Observations	484	484
R^2	0.0568	0.0568

Notes: Huber–White standard errors are shown in parentheses. *** $p < 0.01$.

Vice Example 3: Politics



Blue Ocean Strategy



What About Economic Clustering?

Caveats: Agglomeration Economies

- So why are there so many clustered
- Dark side argument: easier to collude
- Bright side argument: increases the line size
  - Might offset competition effects (similar to Walmart vs Amazon)