

# Marketing & Competition in Pricing Strategy

## Week 2: Predicting Competitive Reactions



## Week 2 Introduction

## What you'll learn about this week...

- Value mapping
  - Real world application: SanDisk and PNY compete in the camera memory card market
- Game theory and pricing
  - The Prisoners' Dilemma
  - Signaling games

## By the end of this week you'll be able to...

- Utilize value mapping to manage the value-price relationship
  - Respond to competitors' prices
- Apply game theory to anticipate and respond to price competition
  - Cooperate and compete without colluding



Predict competitive reactions



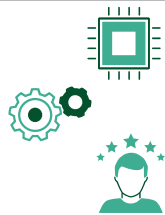
# Value Mapping

(Thomas)

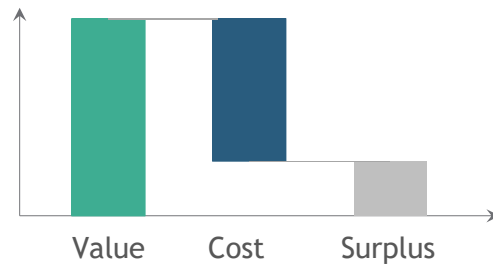
## Recall: Customer Value and Surplus

Customer value  $\equiv \sum_{\text{all } i} \text{Value-drivers}_i$

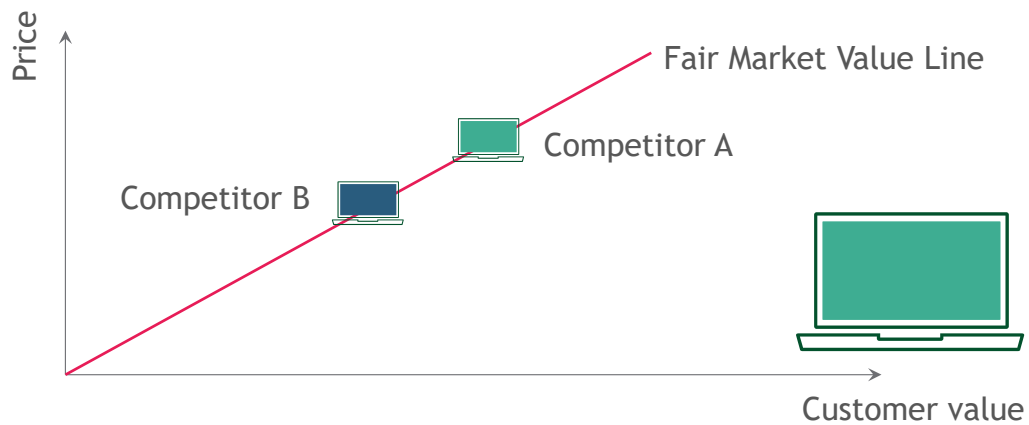
- Technical
- Functional
- Emotional



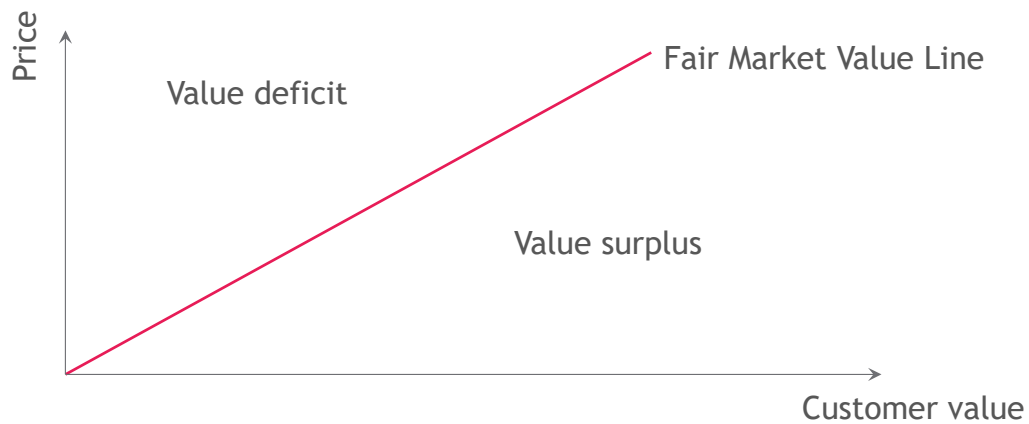
Value surplus  $\equiv$  Customer value  $-$  Cost for customer



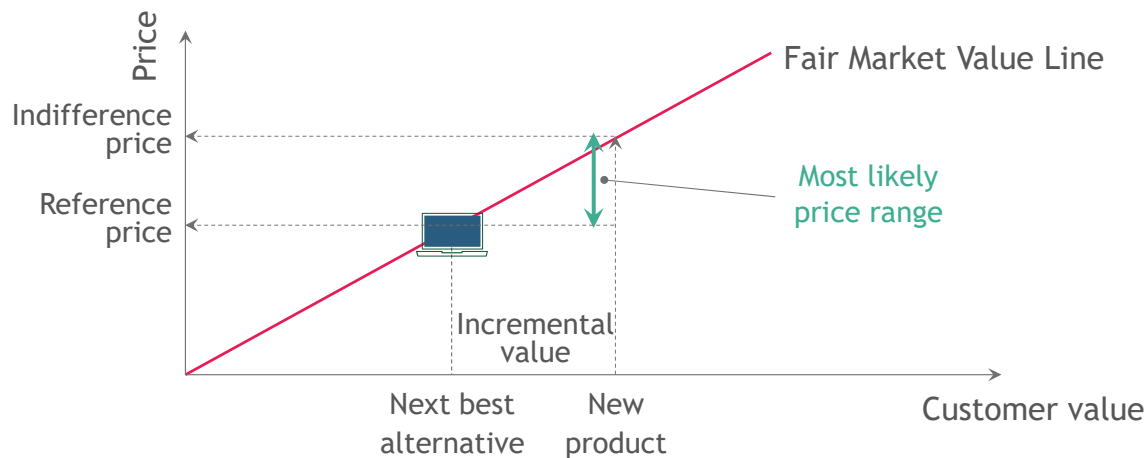
## Value map—Introduction



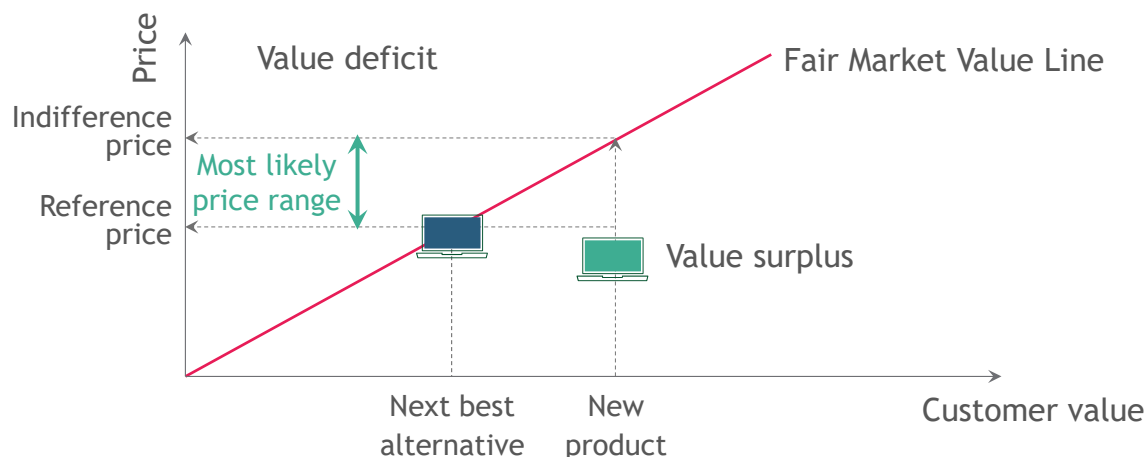
## Value map—Introduction



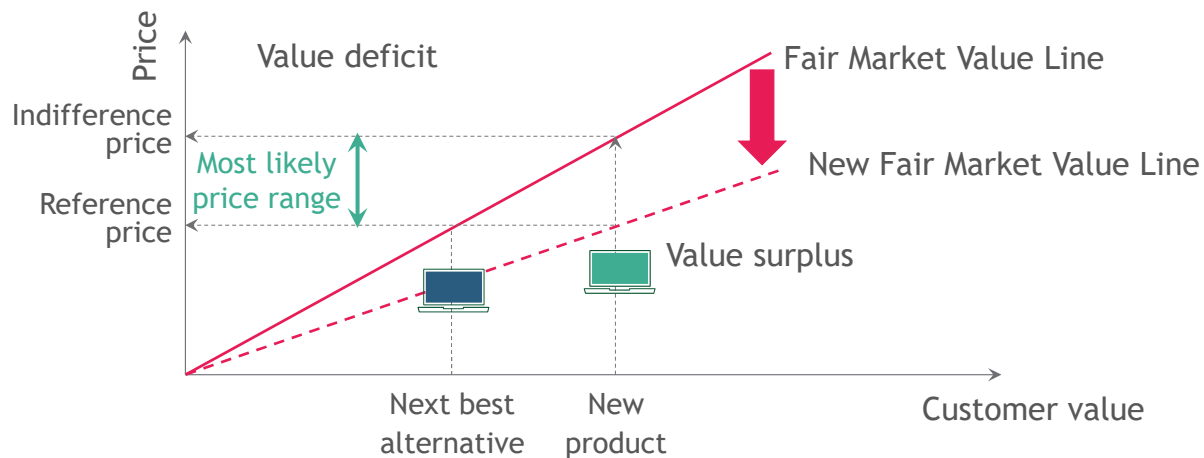
## Use value-based price setting when pricing a new product



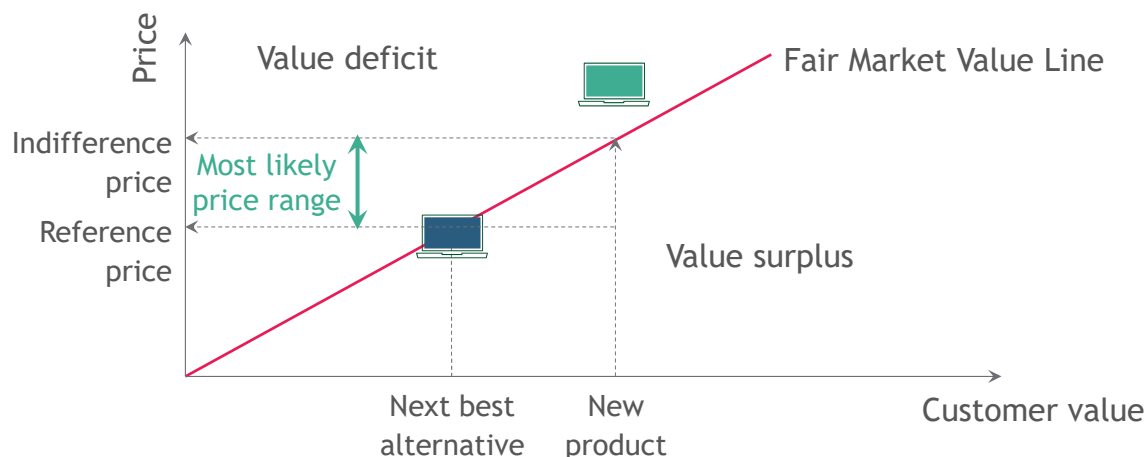
## How should you price your product when your competitors lower their prices?



## How should you price your product when your competitors **lower their prices**?



## How should you price your product when competitors **price above the Fair Market Value Line**?



## Value map—closing thoughts

Value maps assume buyers and sellers act rationally

Plots relative price positions, value-price trade-offs and potential dynamic market responses

Plotting competitors is not easy because it requires measuring customer values



Facilitates management of value-price relationships



## Value Mapping: Application

(Thomas)

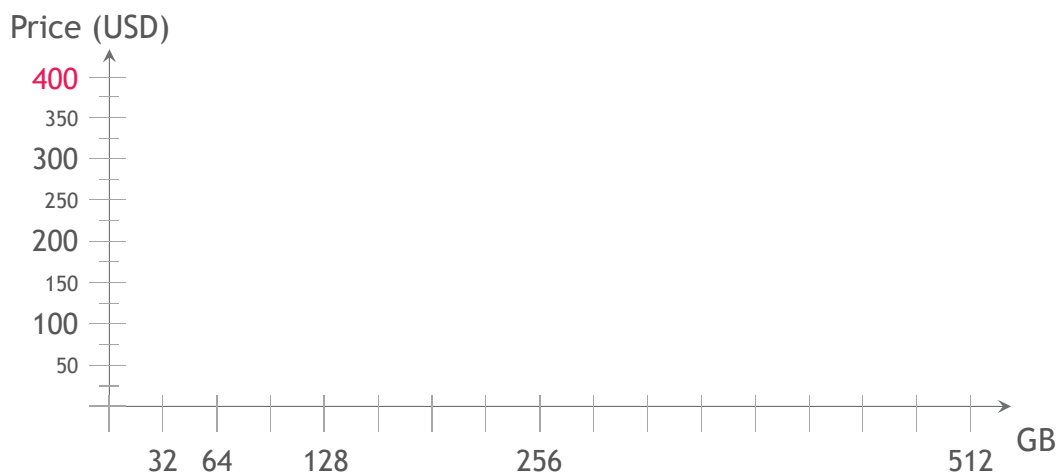
## Value mapping for SD Flash Memory Cards



SanDisk

PNY™

## SDXC flash memory card - price per Gigabyte

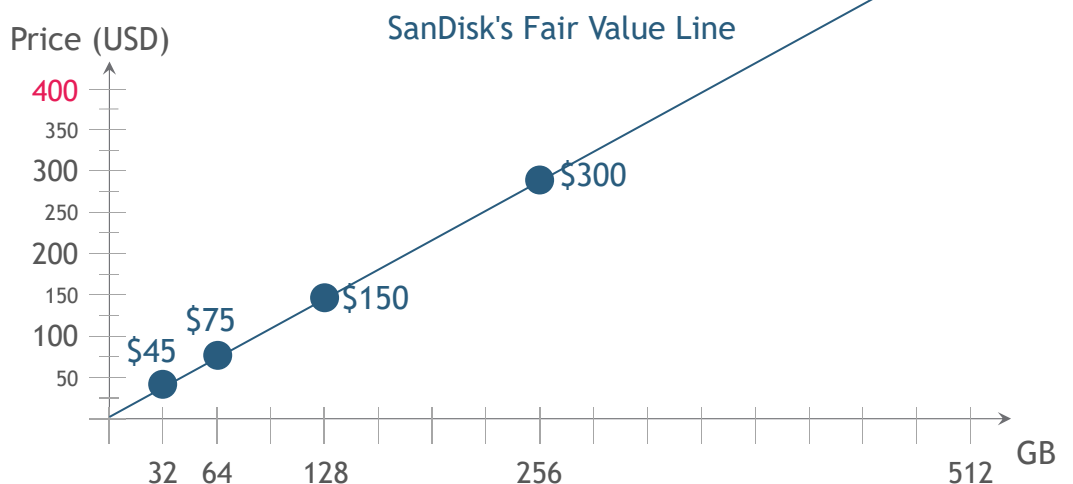


Note: Prices in the U.S. on Amazon.com



## SDXC flash memory card - price per Gigabyte

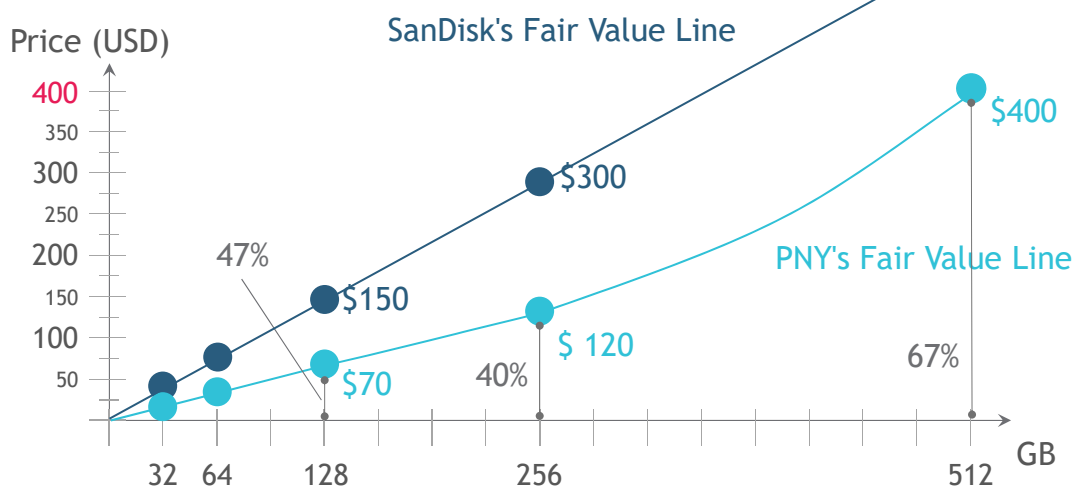
### SanDisk - April 2015



Note: Prices in the U.S. on Amazon.com

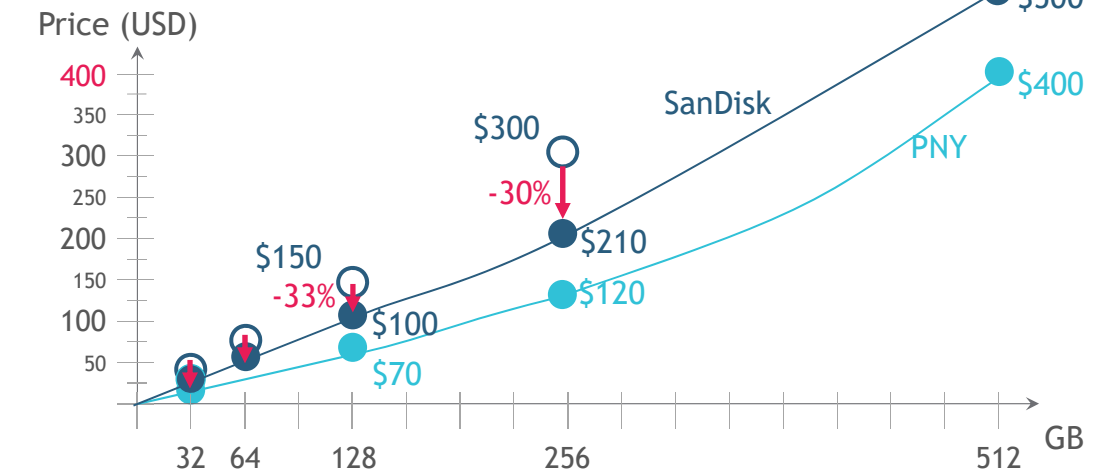
## SDXC flash memory card - price per Gigabyte

### PNY - May 2015

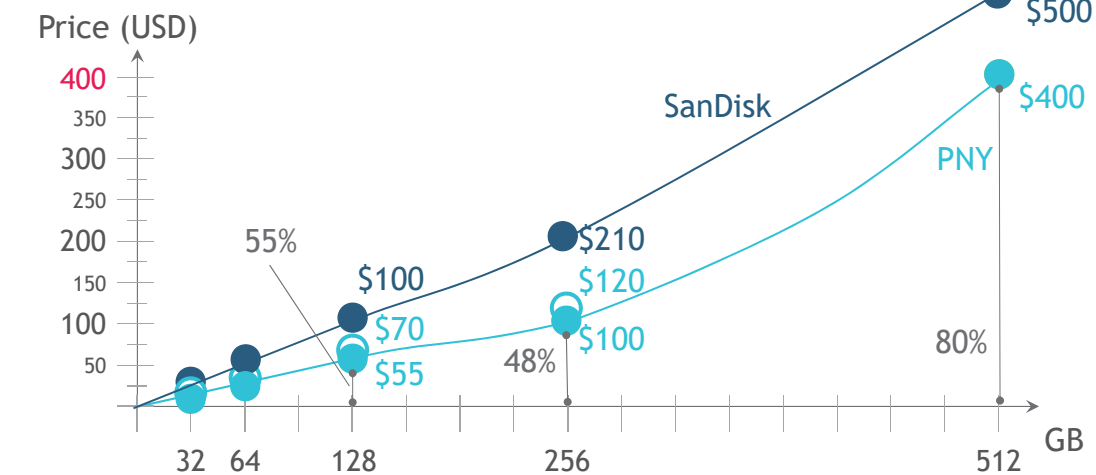


Note: Prices in the U.S. on Amazon.com

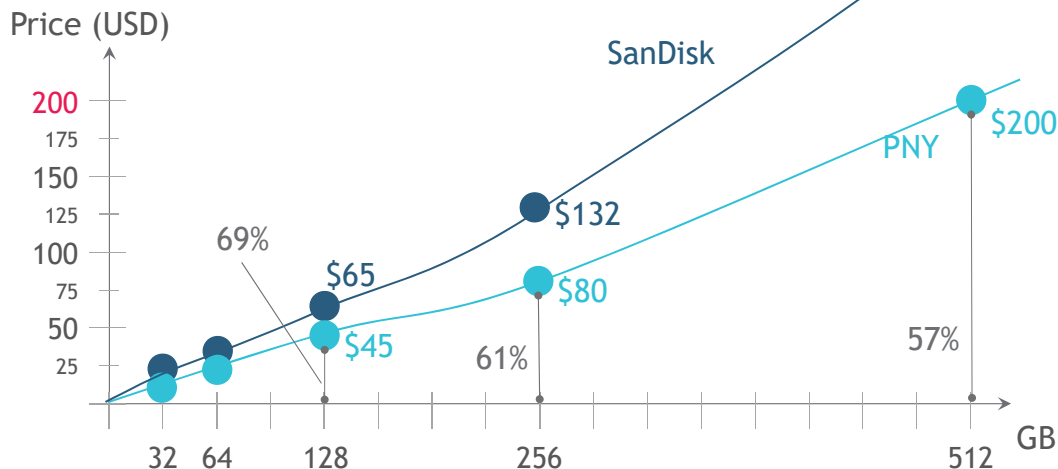
## SDXC flash memory card - price per Gigabyte SanDisk - June 2015



## SDXC flash memory card - price per Gigabyte PNY - June 2015



## SDXC flash memory card - price per Gigabyte September 2016



Note: Prices in the U.S. on Amazon.com

## Value map for SD Flash Memory cards – summary

PNY started selling SDXC UHS-I cards at ~40-50% of SanDisk's price

- Significant value surplus for customers
- PNY pricing next-size-up below SanDisk

SanDisk quickly reduced prices 20-30% to restore price ladder to PNY

- PNY lowers prices further to maintain next-size-up pricing logic

Over time, prices stabilize with PNY selling at ~60-70% of SanDisk

- Price ladder restored for SanDisk ... PNY no longer forcing next-size-up pricing
- Overall price levels lower (market price erosion)

# Using Game Theory to Understand Price Competition

## Game Theory

- The formal analysis of conflict and cooperation among intelligent and rational decision makers
- Useful for analyzing competitive exchanges
  - Limited number of competitors and alternatives
  - Known objectives and payoffs

## Types of Games

- Single-period simultaneous-move games
- Multi-period repeated games
- Sequential games

## The Prisoners' Dilemma

Classic Game



## Truth or Consequences?



## The Payoff Matrix

		Prisoner A Decision	
		Does Not Cooperate	Cooperates
Prisoner B Decision	Does Not Cooperate	A - 1 Year	A - 0 Years
		B - 1 Year	B - 3 Years
	Cooperates	A - 3 Years	A - 2 Years
		B - 0 Years	B - 2 Years

# The Evolution of Cooperation

## Types of Games

- Single-period simultaneous-move games
- Multi-period repeated games
- Sequential games

## Axelrod: The Evolution of Cooperation

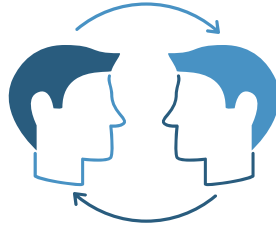


## Axelrod: The Evolution of Cooperation

- The Question
  - What long-term strategies perform best with repeated “games” played with/against the same partners/opponents?
- The Players
  - Game theorists, economists, business people...
- Procedure
  - Players submitted computer programs to simulate decision rules (some very complex)



## What Worked? Tit for Tat



- First cooperate, then do on the next move what the other player did on the preceding move.
- Key attributes: “nice,” “forgiving,” and easy to interpret
- Tit for tat is not exploitable and does well with its own “twin.”

## Promoting Cooperation

- Don't be envious
- Don't initiate aggression
- Don't be too clever
- Practice reciprocity
- Enlarge the shadow of the future game

# Signaling Games

## Types of Games

- Single-period simultaneous-move games
- Multi-period repeated games
- Sequential games

## Sequential Games

- Signaling
  - The selective communication of information to rivals to influence their beliefs and change behavior
  - Commitment: The irreversible elimination of strategic options to make threats credible

## Some Common Signals

- Getting an MBA!



## Some Common Signals

- Getting an MBA!
- Wealth



## Some Common Signals

- Getting an MBA!
- Wealth
- Very common in nature



## Price Signaling

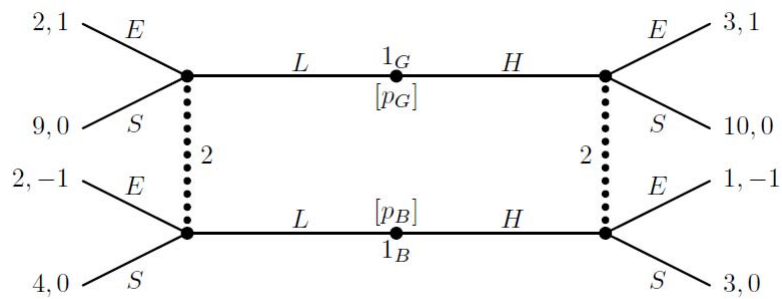
### INCUMBENT

- An incumbent business sets price before another business enters the market
- The incumbent knows whether the market conditions are good or bad
- The incumbent chooses a price

### ENTRANT

- The entrant doesn't
- The entrant decides whether or not to enter

## Extensive Form Signaling Games



## Gas Wars and Takeaways

## Gas Wars



## Gas Wars



## Gas Wars



## Gas Wars





## Gas Wars



## Gas Wars



## Game Theory Takeaways

- Know which game you are playing!
- If you in a repeated game, understand which of your actions are likely to provoke an aggressive response.
- Compete, but do not destroy.
- Stay focused on your profits
- Don't let jealousy cloud your judgment.

“Always remember, others may hate you, but those who hate you don't win unless you hate them, and then you destroy yourself.”

—Richard M. Nixon  
Former President of the United States

## Week 2 Conclusion

### What we talked about this week...

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## Now you're able to...

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Predict competitive reactions