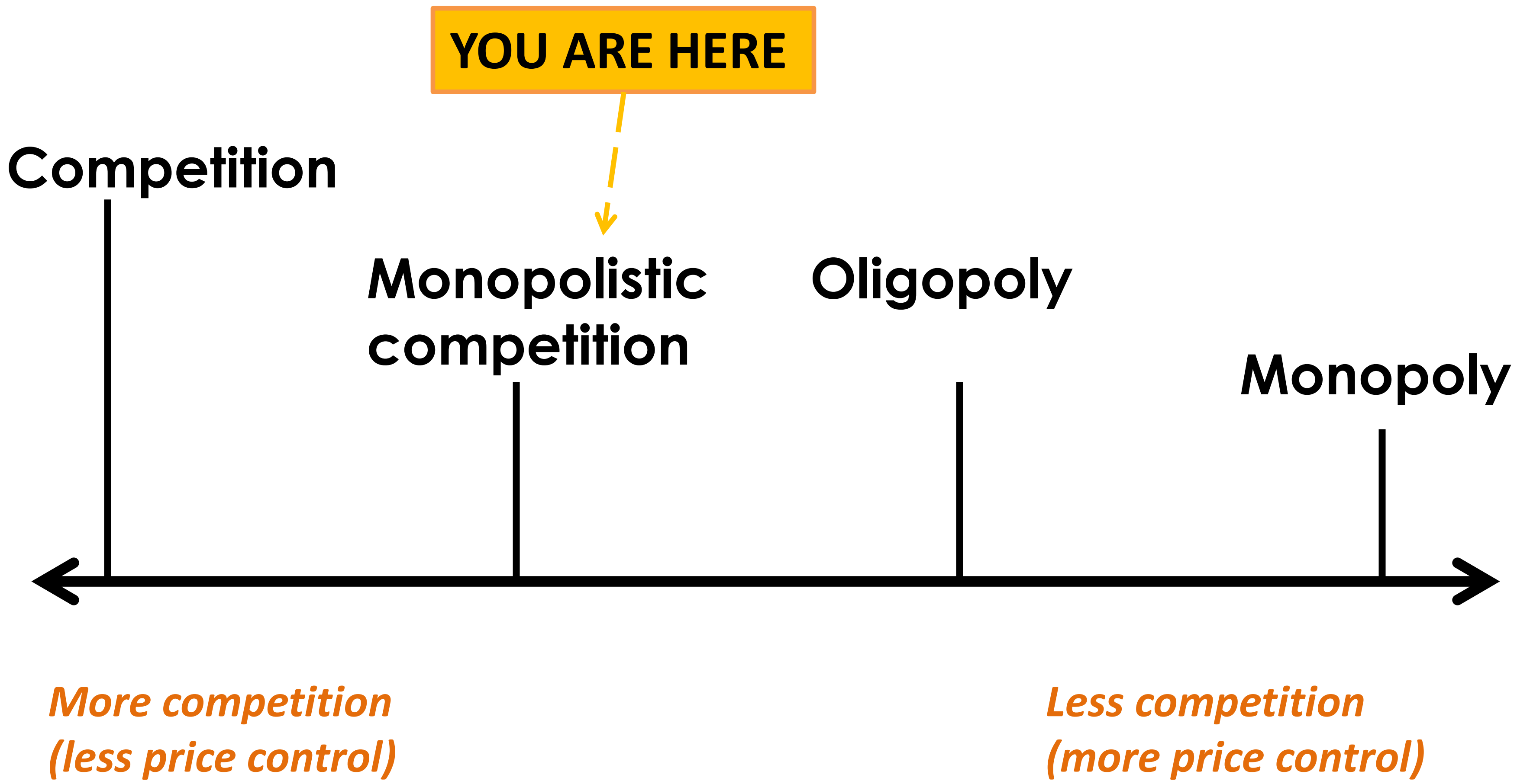
The Landscape of Firms



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- Why monopolistically competitive (and oligopolist) firms **differentiate their products**
- How **prices and profits** are determined in monopolistic competition in the **short run** and the **long run**
- Why monopolistic competition poses a trade-off between **lower prices and greater product diversity**
- The economic significance of advertising and **branding**

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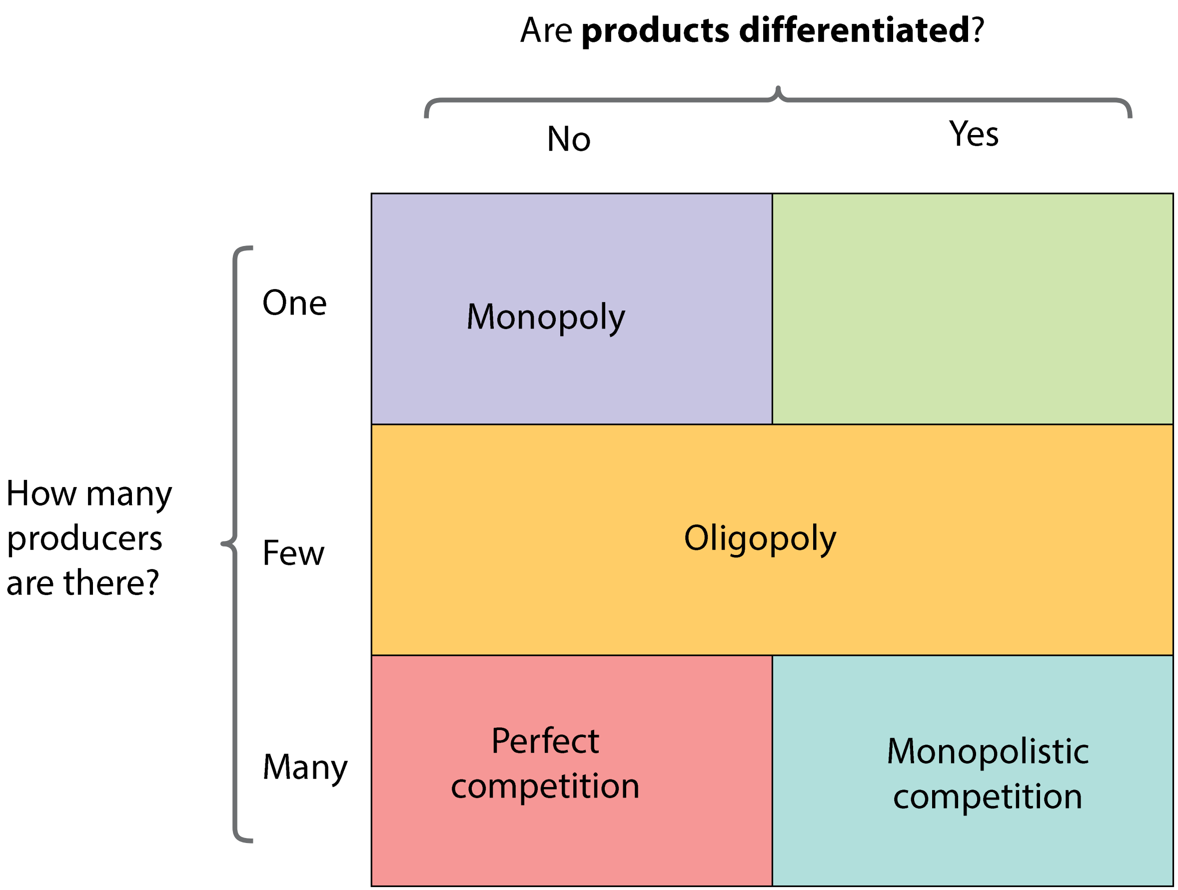
Types of Market Structure



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Monopolistic Competition

Monopolistic competition **is a market structure that's a** ***little like monopoly but, a little more like perfect competition. Specifically:***

- **many competitors**
- **products similar but not identical**
- **free entry into and exit from the industry in the long run**

Restaurants: monopolistic competitors

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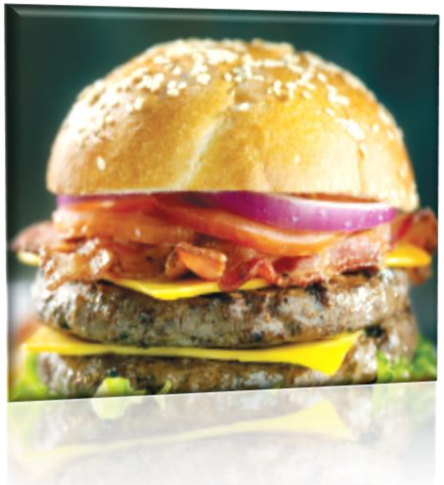
Product Differentiation

<u>Product differentiation</u> plays a crucial role in monopolistic competition.

<u>Tacit collusion (in Oligopoly)</u> is almost impossible when there are many producers. <u>Product differentiation</u> is the only way these firms can acquire some market power.

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Product Differentiation

There are three important forms of product differentiation:

- Differentiation by **style or type**
  - sedans vs. SUVs
- Differentiation by **location**
  - dry cleaner near home vs. cheaper dry cleaner far away
- Differentiation by **quality**
  - ordinary chocolate ($) vs. gourmet chocolate ($$$)

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Active Learning: Application

BUSINESS CASE

Any color, so long as it's black

Ford's strategy was to offer just one style of car, which maximized his economies of scale but made no concessions to differences in taste.

Alfred P. Sloan of GM challenged this strategy by offering a range of car types, differentiated by quality and price.

By the 1930s the verdict was clear: Customers preferred a range of styles!

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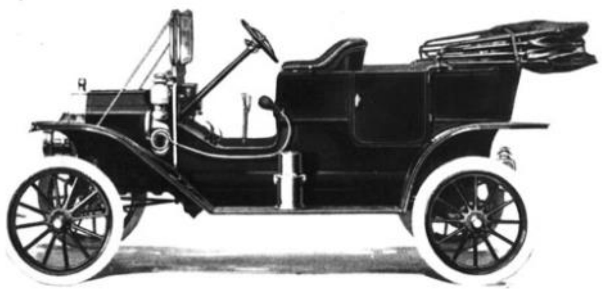
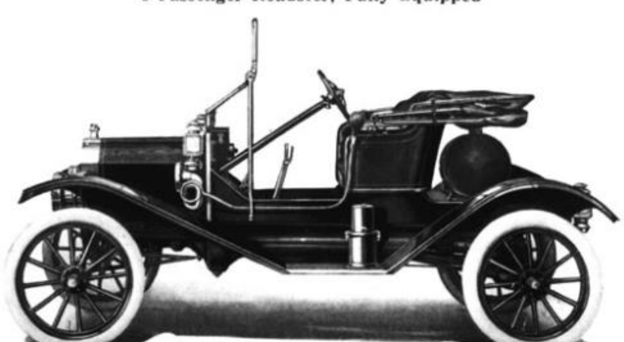
A (Black) Style for Every Occasion

A Complete Line of Model T's to Choose From



5-Passenger Touring Car, Fully Equipped

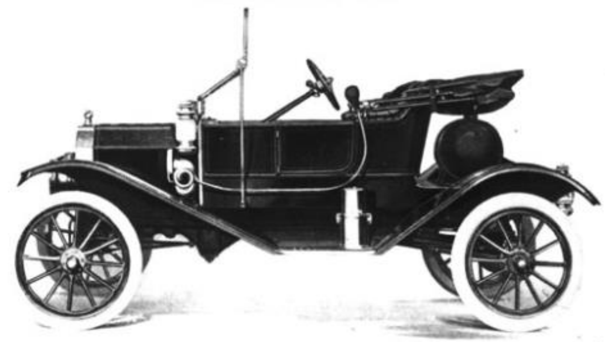
3-Passenger Roadster, Fully Equipped



2-Passenger Open Runabout, Fully Equipped

Ford Car Models Supply Every Demand

2-Passenger Coupé, Equipped with 3 Oil Lamps, Tubular Horn and Kit of Tools



2-Passenger Torpedo Runabout, Fully Equipped

6-Passenger Town Car, Equipped with 3 Oil Lamps, Tubular Horn and Kit of Tools

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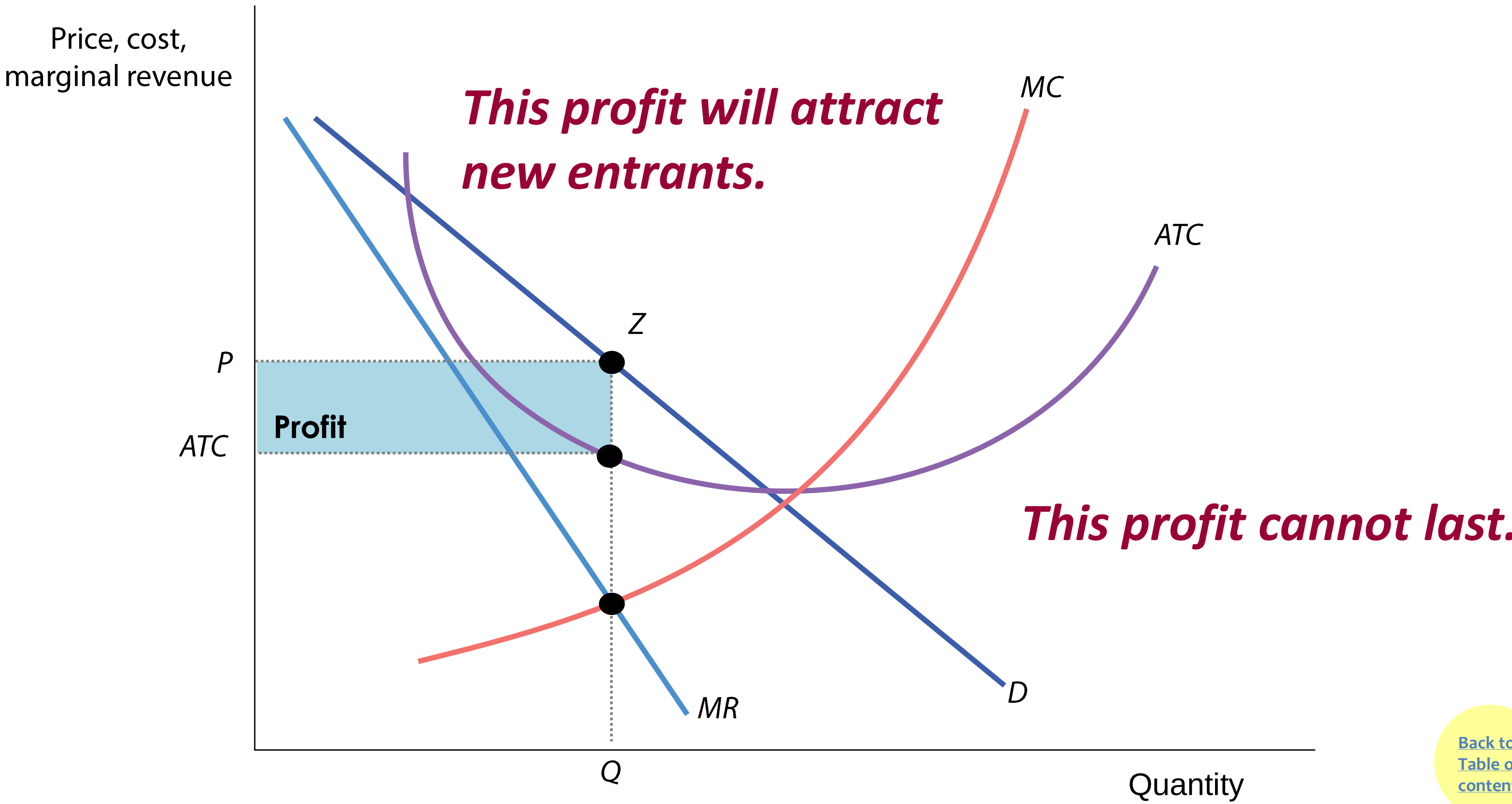
Short-Run Profit Maximization

Same profit maximizing rule as previously used:

1. **Produce the Q at which *MR = MC*.**
2. **Like monopoly firms, set price according to demand.**



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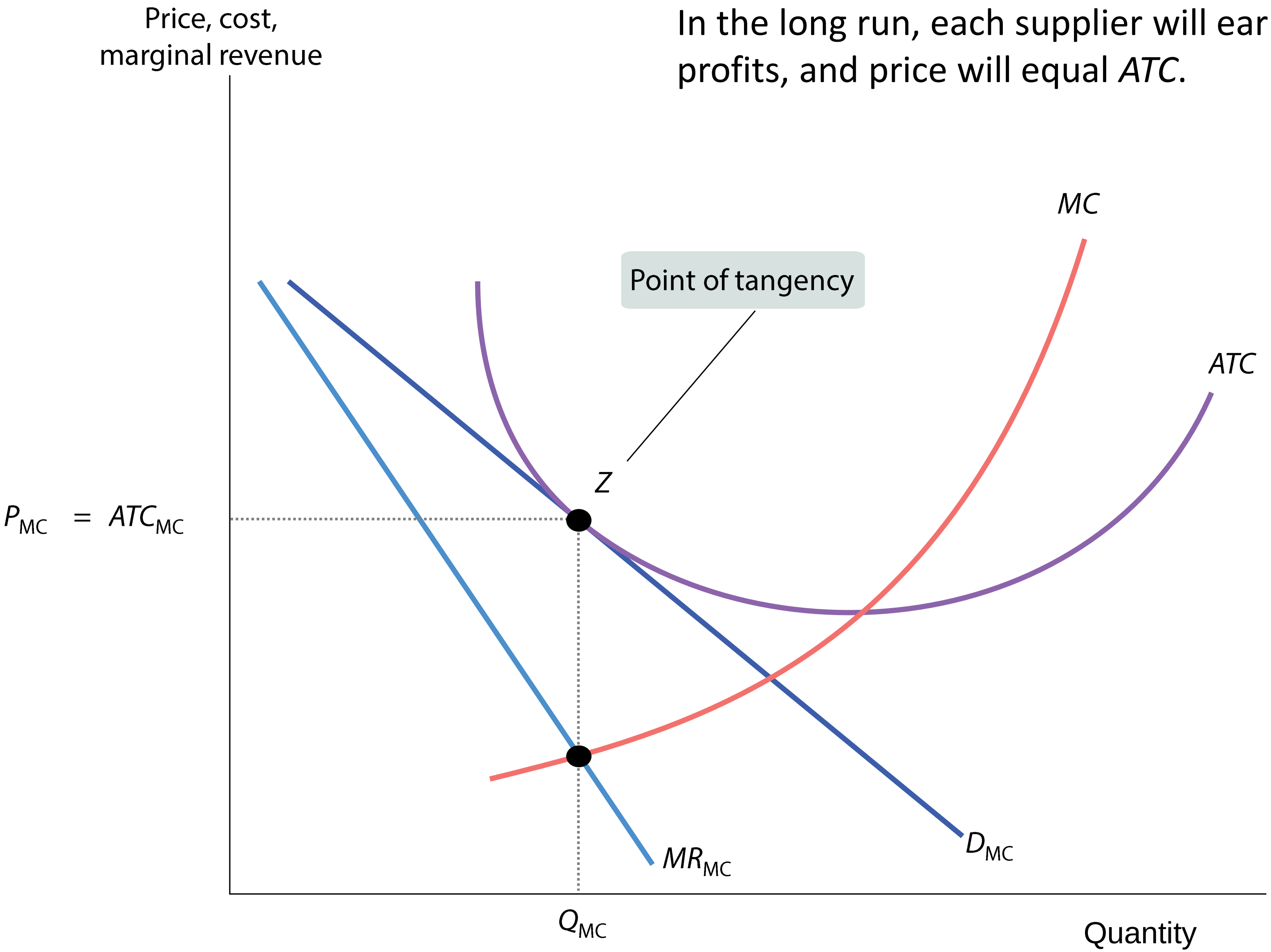
The Long-Run "Zero-Profit" Equilibrium

In the long run, each supplier will earn normal profits, and price will equal *ATC*.



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Is Monopolistic Competition Inefficient?

Firms in a monopolistic industry have ***excess capacity:***

They produce less than the output at which ATC is minimized.

Price > *MC*, so some mutually beneficial trades are unexploited.

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The Economics of Advertising

Oligopolies and monopolistic firms advertise.

What about the other two types of market (Monopoly and Perfect Competition)?

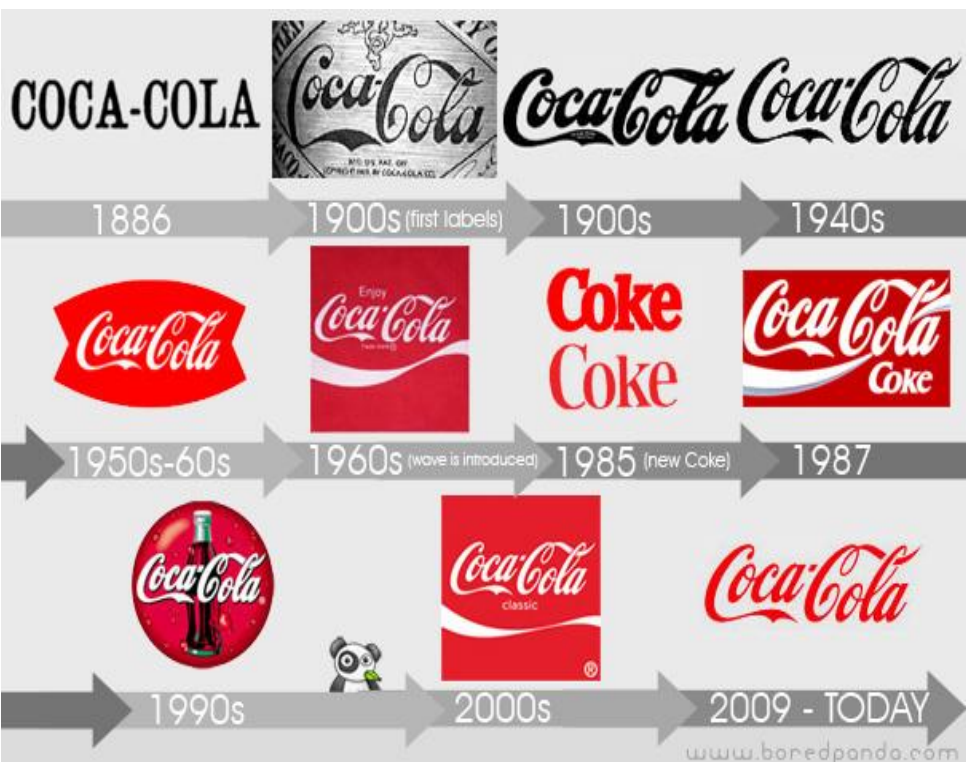
Is advertising good or bad?

There are different types of advertising: with information, and with no information

Branding

Even if NO information is given, does “branding” make the product more enjoyable?

Tasters enjoy the cola more if it’s labeled “Coke”…



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Types of Advertising

"Informative" advertising:

price, quality and availability information

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The World's Ten Most Valuable Brands

Rank	Brand	2011 brand value (US$ in billions)
1	Apple	153.285
2	Google	111.498
3	IBM	100.849
4	McDonald's	81.016
5	Microsoft	78.243
6	Coca-Cola	73.752
7	AT&T	69.916
8	Marlboro	67.522
9	China Mobile	57.326
10	General Electric	50.318

(Source: www.millwardbrown.com/BrandZ.)

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Types of Advertising

Advertising as Signaling

"If they're spending so much $$$ on advertising for this product, they must expect it to be profitable and around a long time. Must be good."

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Oligopoly

An oligopoly is a market that is dominated by a small number of firms.

(Cola): Pepsi and Coke

(oil, gas): 1970s oil crisis

- Oligopolists have an incentive to cheat, and they can benefit from **collusion**
- **Game theory,** especially the concept of the **prisoners' dilemma**
- Anti-trust Law: oligopolists can achieve **tacit collusion**

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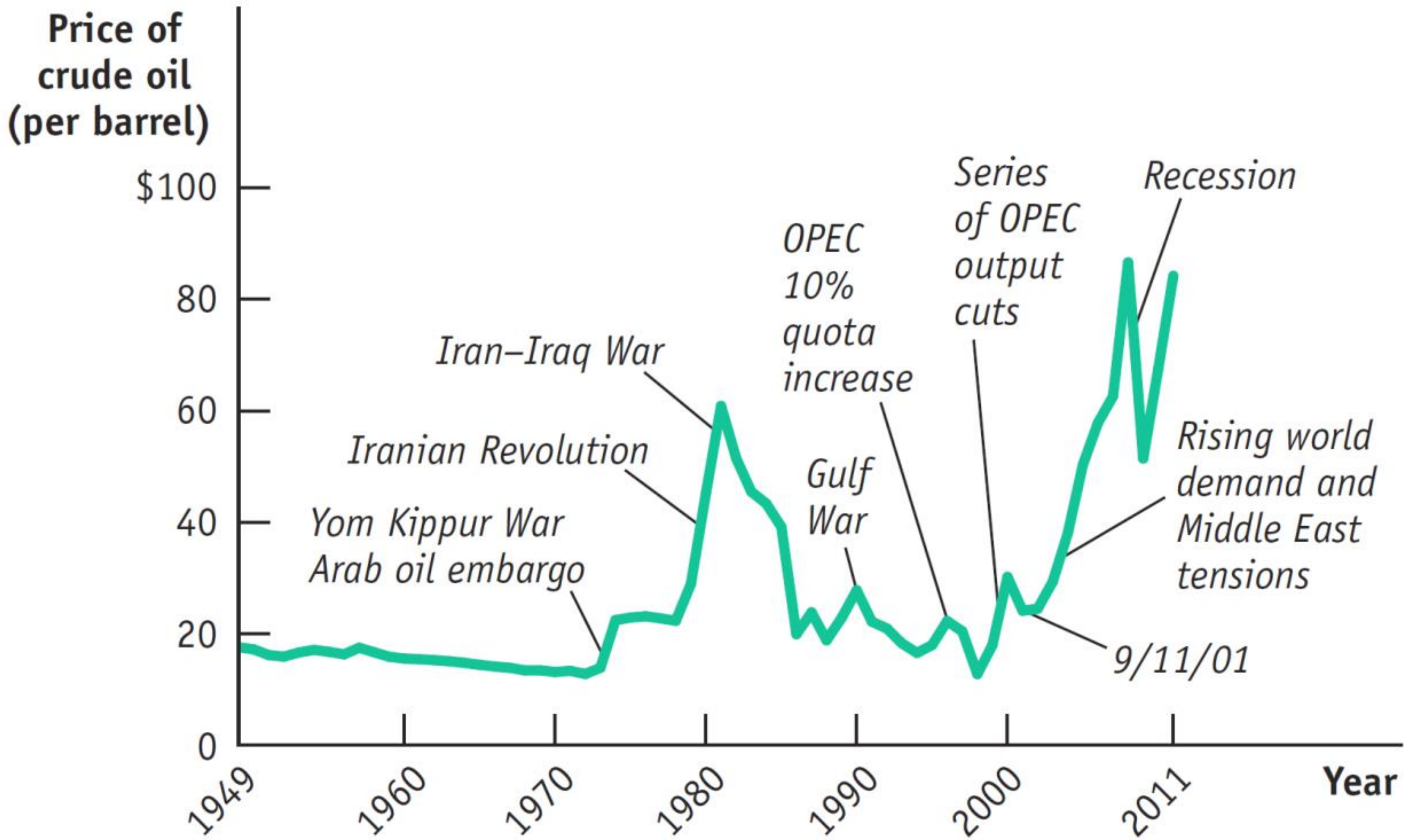
The Ups and Downs of the Oil Cartel

Crude oil prices, 1949–2011
(in constant 2005 dollars)



Source: Energy Information Administration.

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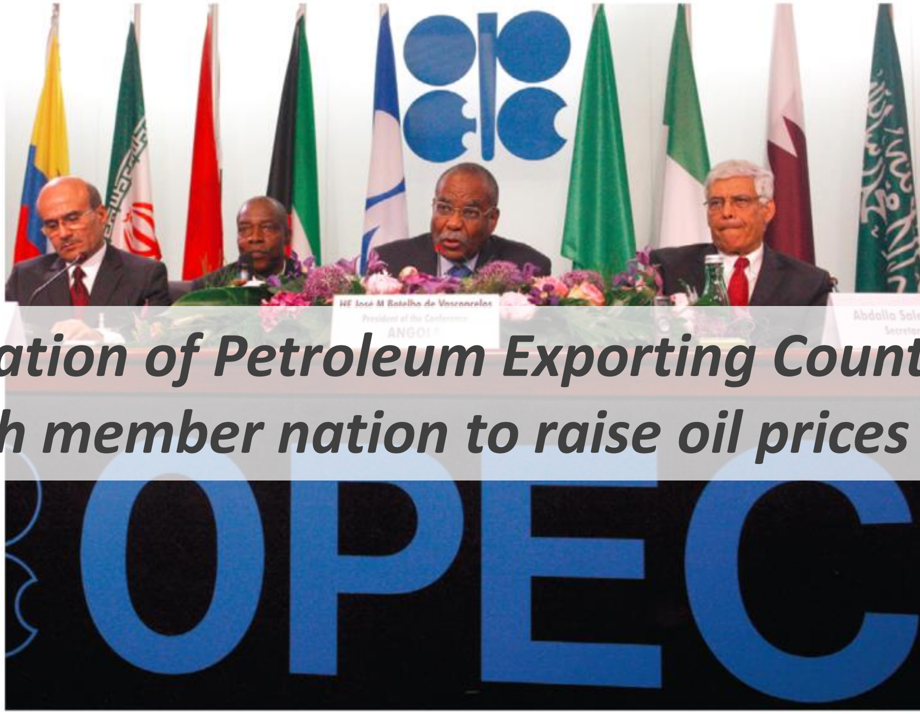
Understanding Oligopoly

Collusion: **firms cooperating to raise each others' profits.**

The strongest form of collusion is a *cartel,* an agreement by several producers to restrict output in order to increase their joint profits.



EPA/Herbert Pfarrhofer/News

OPEC (the Organization of Petroleum Exporting Countries) limits production for each member nation to raise oil prices and profits.

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The Prevalence of Oligopoly

Oligopoly is an Imperfect competition: Not one firm has a complete monopoly, but producers can affect market prices.

The profits of a large firm depend heavily on the actions taken by other large firms.

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Measuring Oligopoly

The *HHI* for an industry is the sum of the squares of each firm's share of market sales.

For example, if there are three firms with 60%, 25%, and 15% market share each:

$$HHI = 60^2 + 25^2 + 15^2 = 4{,}450$$

<u>Justice Department guidelines:</u>

HHI of less than 1,000 indicates a strongly competitive market.

HHI of 1,000 to 1,800 indicates a somewhat competitive market.

HHI above 1,800 indicates an oligopoly.

If HHI is above 1,000, a merger that results in a significant increase in the HHI will receive special scrutiny and is likely to be disallowed.

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Some Oligopolistic Industries

Industry	HHI	Largest firms
PC operating systems	9,182	Microsoft, Linux
Wide-body aircraft	5,098	Boeing, Airbus
Diamond mining	2,338	De Beers, Alrosa, Rio Tinto
Automobiles	1,432	GM, Ford, Chrysler, Toyota, Honda, Nissan, VW
Movie distributors	1,096	Buena Vista, Sony Pictures, 20th Century Fox, Warner Bros., Universal, Paramount, Lionsgate
Internet service providers	750	SBC, Comcast, AOL, Verizon, Road Runner, Earthlink, Charter, Qwest
Retail grocers	321	Walmart, Kroger, Sears, Target, Costco, Walgreens, Ahold, Albertsons

Sources: Canadian Government; Diamond Facts 2006; www.w3counter.com; Planet retail; Autodata; Reuters; ISP Planet; Swivel. Data cover 2006–2007.

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Duopoly

Some of the key issues of Oligopoly can be understood by looking at the simplest case: *duopoly.*

Duopoly: an *oligopoly* consisting of only two firms.

With only two firms in the industry, each realizes that profits would be higher if it limited its production (and kept prices higher).

Cooperation (COLLUSION) between firms may be profitable, but it is unstable—and illegal in the United States.

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Collusion or Not?

To maximize profit, how will firms behave?

- *Will each firm act in its own self-interest, even though this drives down everyone's profits (non-cooperative)?*

Or

- ***Will they engage in collusion, reaching and holding to an agreement that maximizes their combined profits?***

It depends.

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Game Theory Is Everywhere

Game theory: the study of behavior in situations of interdependence; a way of predicting outcomes in strategic situations like oligopolies.

If you say why not bomb them tomorrow, I say why not today? If you say today at five o'clock, I say why not one o'clock?

~JOHN VON NEUMANN, game theory's originator

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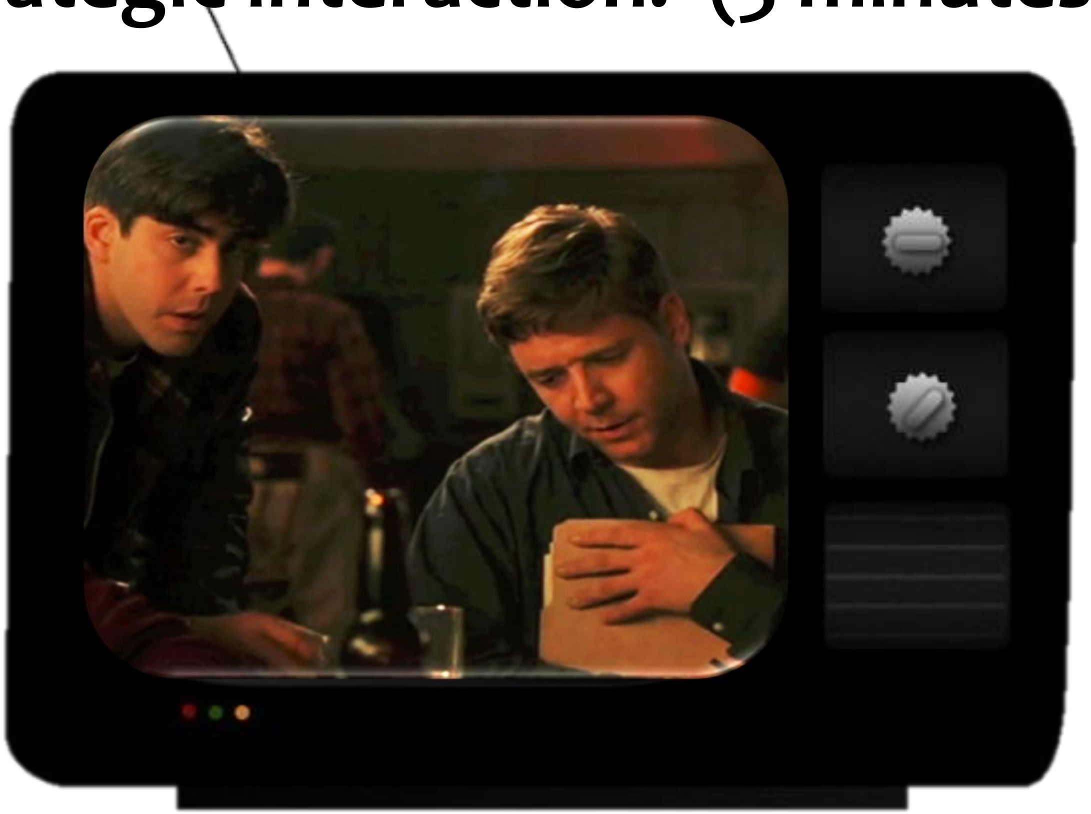
In this clip from *A Beautiful Mind*, we see John Nash (Russell Crowe) experience an epiphany about strategic interaction. (3 minutes)



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A Payoff Matrix

ADM \ Ajinomoto	Produce 30 million pounds	Produce 40 million pounds
Produce 30 million pounds	Ajinomoto makes $180 million profit. ADM makes $180 million profit	Ajinomoto makes $200 million profit. ADM makes $150 million profit
Produce 40 million pounds	Ajinomoto makes $150 million profit. ADM makes $200 million profit	Ajinomoto makes $160 million profit. ADM makes $160million profit

Notice what happen to the price per unit.

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The Prisoners' Dilemma

When each firm has an incentive to cheat but both are worse off if both cheat, the situation is known as a *prisoner's dilemma.*

The game based on two premises:

- ***Each player has an incentive to choose an action that benefits itself at the other player's expense. Zero-sum game.***
- ***When both players act in this way, both are worse off than if they had acted cooperatively.***

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The Prisoners’ Dilemma

Thelma \ Louise	Don’t confess	Confess
Don’t confess	Louise gets 5-year sentence. Thelma gets 5-year sentence.	Louise gets 2-year sentence. Thelma gets 20-year sentence.
Confess	Louise gets 20-year sentence. Thelma gets 2-year sentence.	Louise gets 15-year sentence. Thelma gets 15-year sentence.

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The Prisoners' Dilemma

A dominant strategy: a strategy that is a player's best action that seek for a higher payoff or profit. Depending on the *payoff matrix*, a player may or may not have a *dominant strategy*.

Nash equilibrium (also known as non-cooperative equilibrium): the result when each player in a game chooses to act on each dominant strategies.

Pareto efficient: is when the Nash equilibrium gets the maximum joint profit.

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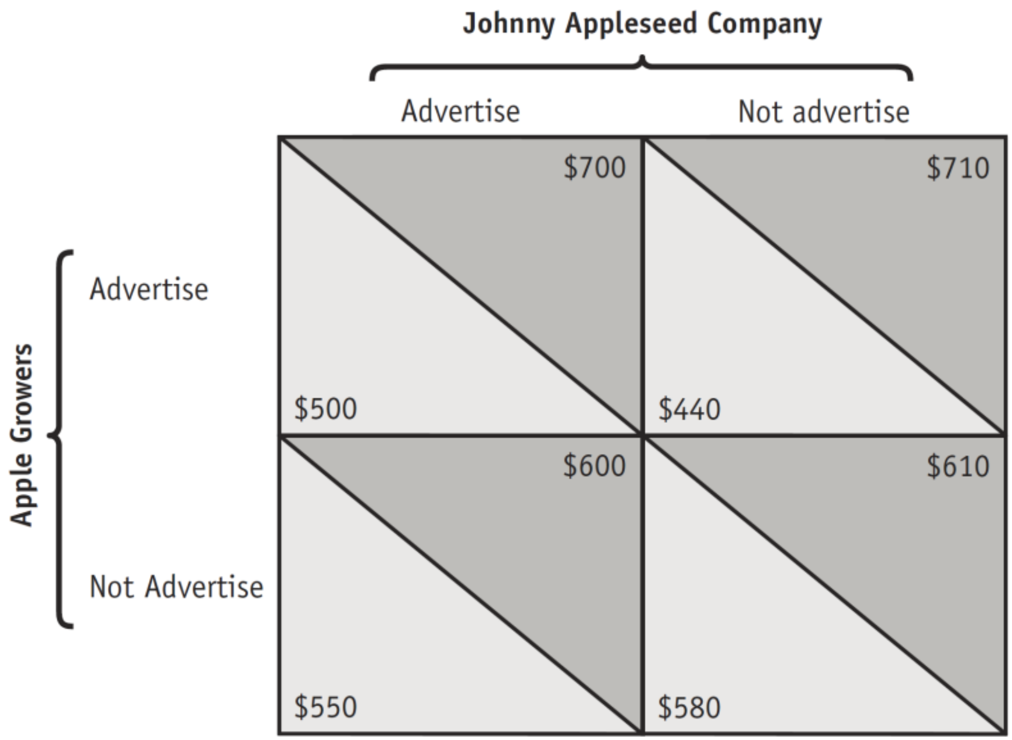
Example



What is Apple Growers' dominant strategy?

a) Advertise

b) Not advertise

c) Apple Growers does not have a dominant strategy.

Note: if the payoff $440 is changed to $740, Apple Growers would not have a dominant strategy

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Another example

		Nikita	
		Build missile	Don't build missile
Margaret	Build missile	−10 −10	−20 8
	Don't build missile	8 −20	0 0

Find the Nash (non-cooperative) equilibrium. (Which actions maximize the total payoff of Nikita and Margaret? Why are they unlikely to choose those actions without communication?)

A)They will both build the missile.

B) Neither will build the missile.

C) Margaret will but Nikita won't build the missile.

D) Nikita will but Margaret won't build the missile.

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Overcoming the Prisoners' Dilemma: Reaching Tacit Collusion

Repeated interaction and tacit collusion

Players who don't take their interdependence into account arrive at a *Nash, or noncooperative, equilibrium.*

***Tit for tat:* a strategy of playing cooperatively at first, then doing whatever the other player did in the previous period.**

But if a game is played repeatedly, players may engage in *strategic behavior,* sacrificing short-run profit to influence future behavior, and they might reach tacit collusion, a silent agreement on certain strategy, usually in the form of Price Leadership or Price Signalling.

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Oligopoly in Practice

Antitrust policies: **efforts undertaken by the government to prevent oligopolistic industries from becoming or behaving like monopolies.**

But many succeed in achieving tacit collusion.

However, tacit collusion is limited by a number of factors, including:

- ***complex products and pricing scheme.***
- ***differences in interests.***
- ***bargaining power of buyers.***

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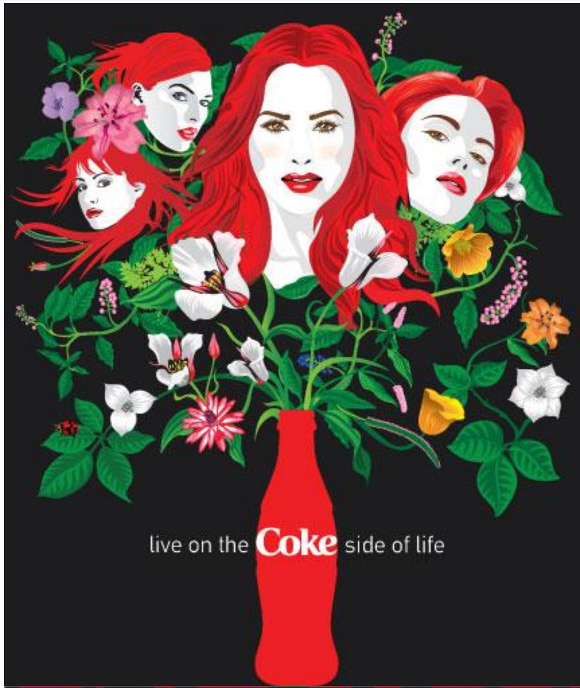
Product Differentiation

Oligopolists often avoid competing directly on price, engaging in *nonprice competition* through advertising and other means instead.



Think about this:

One of the most widely read books in American high schools is "The Catcher in the Rye", by J.D. Salinger. At one point the hero, Holden, is thinking of running away from home, New York City. He thinks his little sister Phoebe will follow him if he does, and he hates the idea of her missing out on her school play. He also likes the idea of being with her. Salinger wrote: "Life is a game, boy; Life is a game that one plays according to the rules".

One might view this as a game, with this payoff matrix:

		Phoebe	
		Run Away	**Stay**
Holden	**Run Away**	(4, 4)	(5, 4)
	Stay	(-2, -2)	(6, 6)

a) What is Holden's dominant strategy? He has no dominant strategy
b) What is Phoebe's dominant strategy? To stay
c) What is the Nash Equilibrium? Both stay, which is also the highest joint payoff.
d) Is this Nash equilibrium a "Pareto Optimum"? (Pareto Optimum or Pareto Efficient: is when both parties better off, or at least as well off as they would be in any other outcome).

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