Market Structures: Oligopoly

Principles of Micro, Lecture 10

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Oligopoly

Core characteristics

What defines an Oligopoly?:

1. Number of firms: few large producers
2. Similarity of the products: similar but not identical products –> there are close substitutes (product differentiation); but they could sell an identical product too (e.g. Brent oil)
3. Entry and exit: large barriers to entry and exit
4. Market power: price maker (market power significant)

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Examples of Oligopolies?

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Examples of Oligopolies?

Key features missing from other market structures:

1. strategic interdependence: what's best for you depends on what's best for others
2. cooperation VS competition: because producers are big, they have incentives to cooperate (and to shirk from the agreed terms)

Types of Oligopolies

Numerous market structures within the oligopoly industry

Types:

1. Duopoly: only 2 large producers
2. Bertrand competition: competition on prices
3. Cournot competition: competition on quantities
4. Stackelberg competition: a market leader and the competitive fringe
5. Cartels
6. The kinked demand curve

A Duopoly

Implications for profits π

Quantity	Price	Total Revenue (and total profit)
0 gallons	$120	$ 0
10	110	1,100
20	100	2,000
30	90	2,700
40	80	3,200
50	70	3,500
60	60	3,600
70	50	3,500
80	40	3,200
90	30	2,700
100	20	2,000
110	10	1,100
120	0	0

A monopolist would produce 60. How about two duopolists?:

- collude: agree on how much to produce (OR, what price to charge): say, 30 each.
- form a cartel: distribute the entire market so that they produce the monopoly quantity –> inherently unstable situation.

A cartel

Why is it inherently unstable?

Start with 30 each.

Do you have an incentive to produce more? Why yes / Why no?

A cartel

Why is it inherently unstable?

Start with 30 each.
Do you have an incentive to produce more? Why yes / Why no?
Given that you produced more, does the other guy have an incentive to produce more? Why yes / Why no?

A cartel

Why is it inherently unstable?

Start with 30 each.
Do you have an incentive to produce more? Why yes / Why no?
Given that you produced more, does the other guy have an incentive to produce more? Why yes / Why no? –> Each has an incentive to shirk from the agreed production quotas because their profits would increase. –> Unstable equilibrium.

Oligopoly

How does it relate to Monopoly and PC?

How does the Duopoly equilibrium compare to the Monopoly equilibrium?

Oligopoly

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How does the Duopoly equilibrium compare to the Monopoly equilibrium?
–> Lower P, higher Q, lower π.
Does this bring the market to the competitive equilibrium? Why yes / Why no?

Oligopoly

How does it relate to Monopoly and PC?

How does the Duopoly equilibrium compare to the Monopoly equilibrium?
–> Lower P, higher Q, lower π.
Does this bring the market to the competitive equilibrium? Why yes / Why no?
$\Rightarrow$ Nash equilibrium: a situation in which economic actors interacting with one another each choose their best strategy given the best strategies that all the others have chosen.

A cartel

An example: OPEC

The oil market: Why Venezuela increases their oil production (beyond their quota!), and Saudi Arabia does not?:

- the output effect on profits: selling one more barrel would increase profits
- the price effect from output: if Venezuela increases Q by a lot, then P will start falling (so everyone in the market will suffer, including Venezuela)

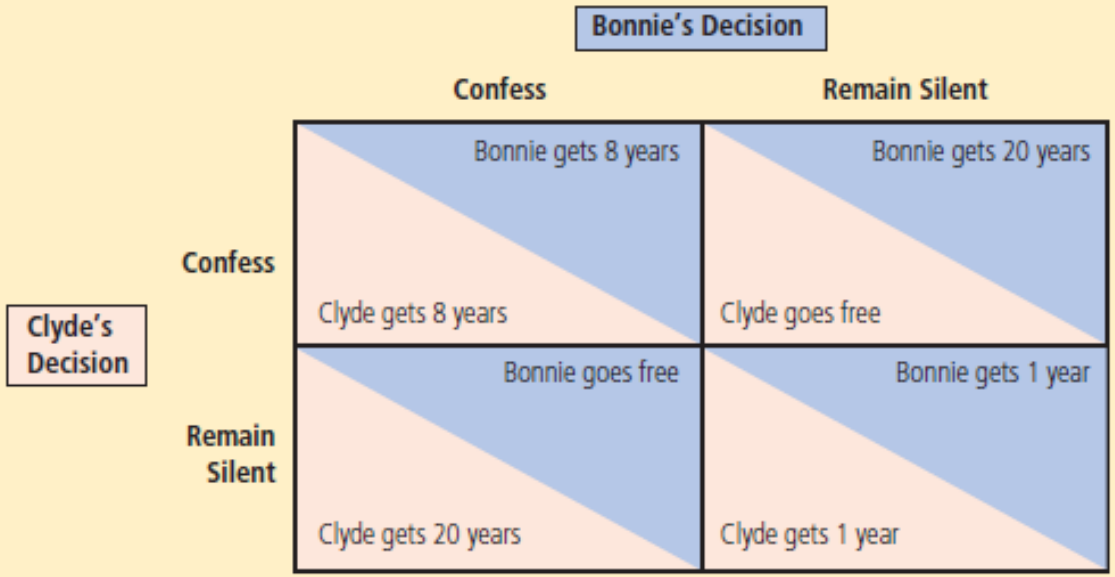
$\Rightarrow$ The decision to raise or not raise production depends on which of the two effects would dominate.

Difficulties of cooperation

Game theory: the prisoner's dilemma

FIGURE 1

The Prisoners' Dilemma
In this game between two criminals suspected of committing a crime, the sentence that each receives depends both on his or her decision whether to confess or remain silent and on the decision made by the other.



What's best for Bonnie? What's best for Clyde?

Dominant strategy

A strategy that is best for you regardless of what's best for others.

Oligopoly

A Game theoretic approach

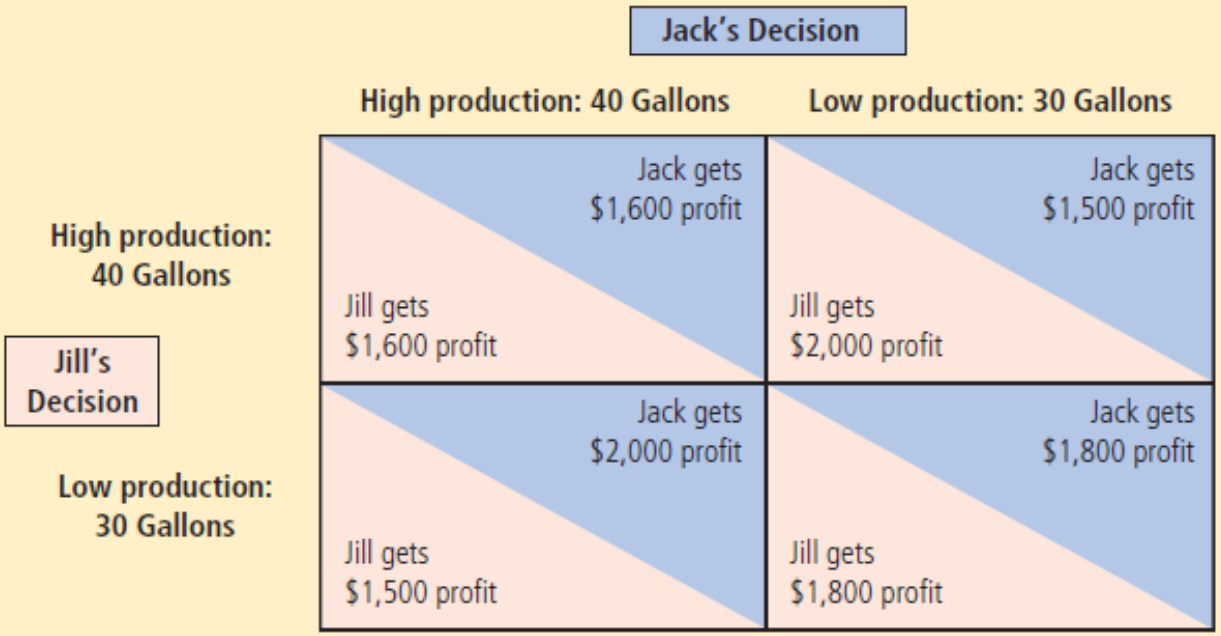


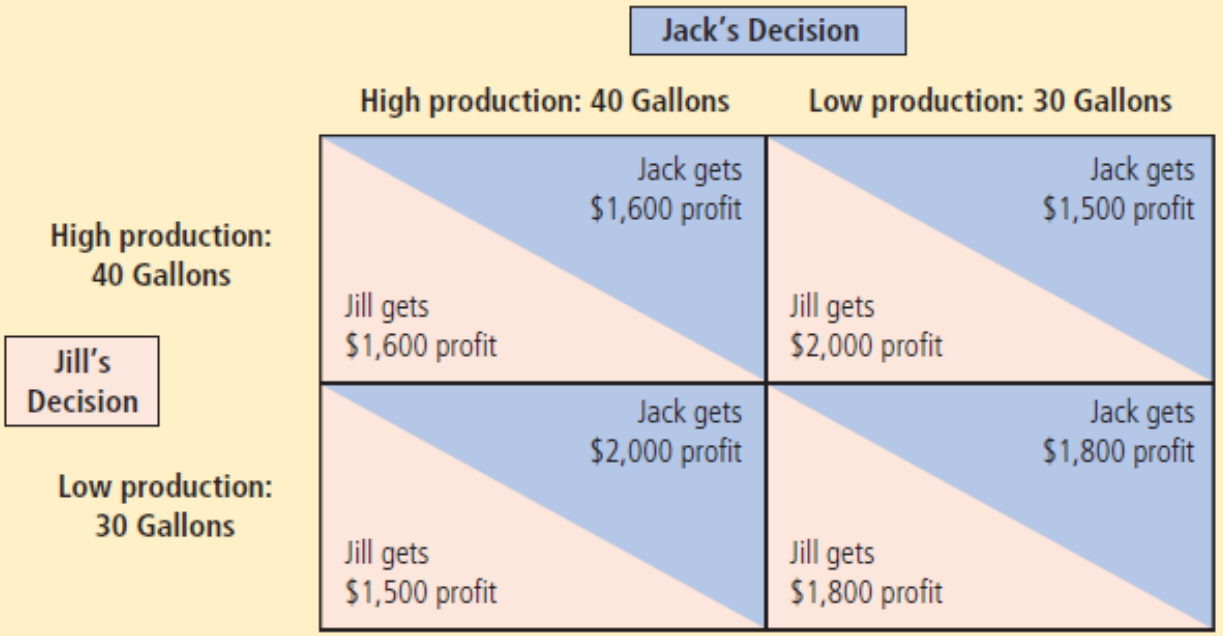
FIGURE 2

Jack and Jill's Oligopoly Game
In this game between Jack and Jill, the profit that each earns from selling water depends on both the quantity he or she chooses to sell and the quantity the other chooses to sell.

What's best for Jack? What's best for Jill?

Oligopoly

A Game theoretic approach



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What's best for Jack? What's best for Jill?

Both have incentives to produce more than previously agreed.

Politics as a game: Arms Race

A Game theoretic approach to the Cold War

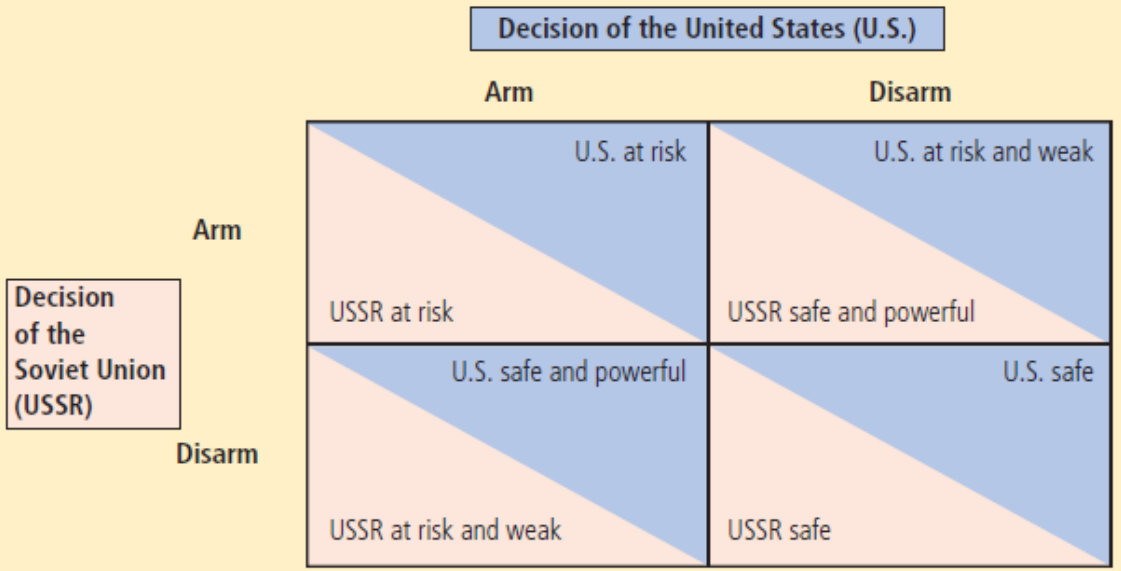
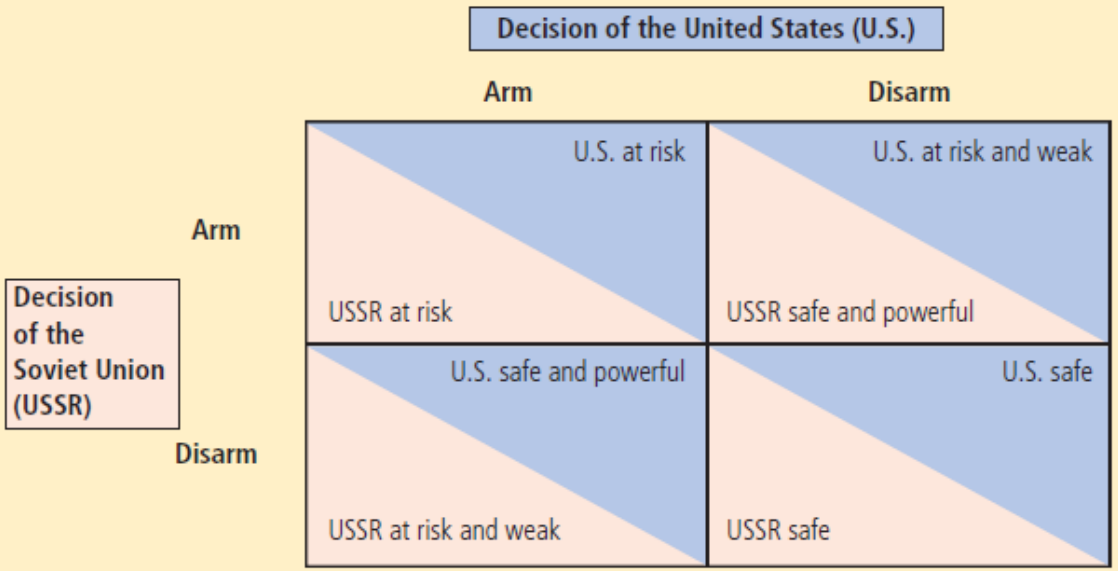


FIGURE 3

An Arms-Race Game
In this game between two countries, the safety and power of each country depend on both its decision whether to arm and the decision made by the other country.

Politics as a game: Arms Race

A Game theoretic approach to the Cold War



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An Arms-Race Game
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–> Star wars was a real military program initiated in 1983!

–> a long road to disarmament

–> recent efforts by China and Russia to demonstrate renewed military power

Policy Responses to Oligopolies

The Practice

Policy Responses to Oligopolies:

1. increasing competition (Antitrust Laws, Competition protection authorities)
2. headline antitrust cases (US vs Microsoft, EU vs Microsoft)
3. more recently: privacy issues with Facebook, and Google

Further Info

Reading:
M-T, ch.16 (about: Oligopoly): 329-354

Do not miss:
economist.com; wsj.com; cnbc.com