

Chapter 8: Market Power

Oligopoly



Market Power: Oligopoly

Definition:

Oligopoly is a market structure that features a small number of firms.



Market Power: Oligopoly

Small number of firms → strategic interactions:

**The actions of one firm has direct effects
on the other firms (and vice-versa)**

**→ in making its own decision, a firm tries to
anticipate what the other firms are about to do!**



Game Theory



Market Power: Oligopoly

Definition:

A **Dominant Strategy** represents a strategy that is preferred by a player irrespective of the strategy selected by the other player.

Simultaneous Games

Definition:

A **Simultaneous Game** is a type of game in which players move simultaneously or, alternatively, they are unaware of the other players' actions.



A Simple Entry Game:

Social Network Industry (1)

	<i>Entry</i>	<i>No Entry</i>
Stay	8 , - 20	10 , 0
Exit	0 , -10	0 , 0

Table 8.1: Table of payoffs of Facebook and AceBook (in billion dollars). AceBook's payoffs and strategies are depicted in *italics*.

A Simple Entry Game: *Social Network Industry (2)*

	<i>Entry</i>	<i>No Entry</i>
Stay	8 , -2	10 , 0
Exit	0 , 10	0 , 0

Table 8.2: Table of payoffs of Facebook and Google (in billion dollars). Google's payoffs and choices are depicted in *italics*.



A Simple Entry Game: *Social Network Industry (2)*

	<i>Entry</i>	<i>No Entry</i>
Stay	8 , -2	10 , 0

Table 8.2: Table of payoffs of Facebook and Google (in billion dollars). Google's payoffs and choices are depicted in *italics*.



A Simple Entry Game: *Social Network Industry (2)*

	<i>Entry</i>	<i>No Entry</i>
<i>Stay</i>	8 , -2	10 , 0

Table 8.2: Table of payoffs of Facebook and Google (in billion dollars). Google's payoffs and choices are depicted in *italics*.

Assumes Rationality: Google believes that Facebook is *acting rationally* (Facebook acts with the objective of max. its profit)



Prisoner's Dilemma Game

	<i>Advertising (ANZ)</i>	<i>No Advertising (ANZ)</i>
Advertising (NAB)	70 , 70	120 , 50
No Advertising (NAB)	50 , 120	100 , 100

Table 8.4: Table of payoffs of ANZ and NAB (in million dollars). ANZ's payoffs and strategies are depicted in *italics*.



Prisoner's Dilemma Game

	<i>Advertising (ANZ)</i>	<i>No Advertising (ANZ)</i>
<i>Advertising (NAB)</i>	70 , 70	120 , 50
<i>No Advertising (NAB)</i>	50 , 120	100 , 100

Table 8.4: Table of payoffs of ANZ and NAB (in million dollars). ANZ's payoffs and strategies are depicted in *italics*.

“(Adv., Adv.)” is **realized outcome**
(total earnings = \$140bil.)
cooperation outcome
(total earnings = \$200bil.)

**Not Pareto
Optimal** 😞

Prisoner's Dilemma Game


The individual quest for profit does not lead to socially optimal allocation of resources

Adam Smith's Invisible Hand Principle fails!

Cartel Game

Definition:

Cartels represent private agreements aimed at increasing the profit of the cartel members by *reducing competition in the market.*



by **controlling prices** or **preventing entry**

Cartel Game

Cartels are **illegal** nearly everywhere (prohibited under *competition law*)

→ cartel members **cannot write enforceable contracts** to keep the other members in line

 **prisoner's dilemma**

Cartel Game

		<i>Firm B</i>	
		<i>Price Cut</i>	<i>No Price Cut</i>
<i>Firm A</i>	<i>Price Cut</i>	150, 150	300, 100
	<i>No Price Cut</i>	100, 300	200, 200

Table 8.5: Table of payoffs of firm A and B (in million dollars). Firm B's payoffs and choices are depicted in *italics*.

“(No Price Cut, No Price Cut)” is collectively optimal BUT...



Cartel Game

		<i>Firm B</i>	
		<i>Price Cut</i>	<i>No Price Cut</i>
Firm A	<i>Price Cut</i>	150, 150	300, 100
	<i>No Price Cut</i>	100, 300	200, 200

Table 8.5: Table of payoffs of firm A and B (in million dollars). Firm B's payoffs and choices are depicted in *italics*.

“(Price Cut, Price Cut)” is the realized outcome

Coordination Games

Definition:

Coordination Games are a type of games that capture those situations where the *players benefit from coordinating their decisions*.



Battle of the Sexes

Definition:

Battle of the Sexes is a game in which players differ over which activity they would prefer to engage in, but they still prefer engaging in the same activity over going alone.

Coordination Games:

Battle of the Sexes


	<i>Theatre</i>	<i>Stadium</i>
Theatre	20 , 10	0 , 0
Stadium	0 , 0	2 , 15

Table 8.6: Table of payoffs of A and B (in utils). B's payoffs and strategies are depicted in *italics*.

Battle of the Sexes

Definition:

A **Strategy Profile** denotes a set of strategies, one for each player.


(Theatre, *Stadium*); (Stadium, *Theatre*);
(Stadium, *Stadium*); (Theatre, *Theatre*)

Coordination Games:

Battle of the Sexes

	<i>Theatre</i>	<i>Stadium</i>
<i>Theatre</i>	20 , 10	0 , 0
<i>Stadium</i>	0 , 0	2 , 15

Table 8.6: Table of payoffs of A and B (in utils). B's payoffs and strategies are depicted in *italics*.

- Both strategy profiles are **possible outcomes** of the game
- A/B do **no benefit by unilaterally changing their strategies**
- Both strategy profiles are **Nash equilibria of the game!**

Coordination Games: *Battle of the Sexes*

	<i>Theatre</i>	<i>Stadium</i>
Theatre	<i>20, 10</i>	0, 0
Stadium	0, 0	<i>2, 15</i>

Table 8.6: Table of payoffs of A and B (in utils). B's payoffs and strategies are depicted in *italics*.

Both strategy profiles are ***Nash equilibria of the game!***

How to choose?

Coordination Games:

Battle of the Sexes

	<i>Theatre</i>	<i>Stadium</i>
Theatre	20, 10	0, 0
Stadium	0, 0	2, 15




Table 8.6: Table of payoffs of A and B (in utils). B's payoffs and strategies are depicted in *italics*.

more fair in terms of the distribution of utils
& gives *collectively* more (30 vs. 17) BUT ...
(it's an open question)