

RIVALRY

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AGSM

Rivalry

- What is rivalry?
 - What form does rivalry take?
 - What other ways can we think about business interactions?
- Pricing rivalry
 - What is pricing rivalry?
 - Is it always (ever?) a good idea?
 - How does market structure affect dynamic strategies?
 - A common pitfall
- Co-opetition
 - A new way of looking at business, using five PARTS and the Value Net

In Managers, Markets, and Prices.

You learnt:

- about applying the *tools of game theory* to analyse *oligopolies* (markets with few sellers), including two-seller *duopolies*
- with the concept of *Nash equilibrium*: a situation where no player wants to alter its strategy, given others' strategies
- Oligopolies (including duopolies) can be modelled as *Prisoner's Dilemmas*:
 - collectively you'd both be better off *cooperating*, but
 - individually you're each better *defecting* (cutting your price in a price war, or expanding your capacity as in OPEC)
- but *repetition* may allow firms, players, to escape from this logic, without recourse to contracts, trust, or third parties — indeed, even without direct communication — to sustain cooperative behaviour.

Today: we explore repeated rivalry, and why some industries have more cooperation, while others are more competitive.

An Example.

- Rupert Murdoch's *New York Post* takes on the *New York Daily News*.

	<i>N.Y. Post</i>	<i>N.Y. News</i>
January 1994	40¢	40¢
February 1994	50¢	40¢
March 1994 (in Staten Island)	25¢	40¢
July 1994	50¢	50¢

- Until Feb 1994 both papers were sold at 40¢. Then the *Post* raised its price to 50¢ but the *News* held to 40¢ (since it was used to being the first mover). So in March the *Post* dropped its Staten Island price to 25¢ but kept its price elsewhere at 50¢, until *News* raised its price to 50¢ in July, having lost market share in Staten Island to the *Post* and having accepted that the *Post* would henceforth be the leader in any price hike. So both were now priced at 50¢ everywhere in NYC.

Business is a Game, of Sorts

Business is a game, but different from structured board games or arcade games or computer games:

- it is not win-lose (not zero-sum): possible for all players to win
- apart from the law, there is no rule book
- others will change the game to their advantage
- the game is made up of five PARTS
- success comes from *playing the right game*

So game theory provides a framework for an ever-rapidly changing world.

The PARTS of the Business Game

Players: customers, suppliers, rivals, allies;
Change any, including yourself.

Added Values: what each player adds to the game (taking the player out would subtract their added value).
Ways to raise yours, or lower theirs.

Rules: give structure to the game; in business — no universal set of rules
from law, custom, practicality, or contracts
Can revise exiting rules, or devise new ones

Tactics: moves to shape the way:
— players perceive the game, and hence
— how they play
Tactics to reduce misperception, or to create or maintain misperception.

Scope: the bounds of the game: expand or shrink.

PARTS gives more than a framework, it provides a complete set of levers, using the Value Net, see later.

Question: Left or Right?

You can choose Left or Right:
Profits:

	Left	Right
You	\$40 m	\$80 m
Rival	\$20 m	\$160 m

A Pricing Rivalry Duopoly Game

- You (and your team) are sellers of a homogeneous, unbranded commodity.
- There is one other seller of this product in the market.
- Since the product is a commodity, buyers will automatically buy from the seller with the lowest price.
- If both sellers charge the same price, then the two sellers split the market.
- If one seller charges a lower price, then that seller gets all the sales.

Demand For The Product

The industry demand for the product is as follows:

Industry Demand	
<i>Price</i>	<i>Quantity</i>
\$9	0
\$8	1
\$7	2
\$6	3
\$5	4
\$4	5
\$3	6
\$2	7
\$1	8
\$0	9

Profits and Costs

➤ If you price at \$4 and the other team at \$5, then you make all the sales, selling 5 units for a sales revenue of \$20. The other team has zero revenue.

➤ There is an average cost of \$2 per unit, so your profit π would be

$$\pi = \$20 - (5 \times \$2) = \$10$$

The other team has zero costs and so zero profits, when you undercut them.

➤ Your aim is to maximise your team's *profit*.

The Game

- We will play the pricing game for several rounds.
- Each round, you and your opposing team will simultaneously (and secretly!) choose a price.
- You will have a minute to decide your price.
- Write your price on the slips of paper provided.
- As soon as prices are submitted, I'll collect the prices and show you your profits and the other team's profits.
- Total profits will be calculated at the conclusion of the game.
- Your aim is to maximise your team's *profit*.

Game Debrief

Questions:

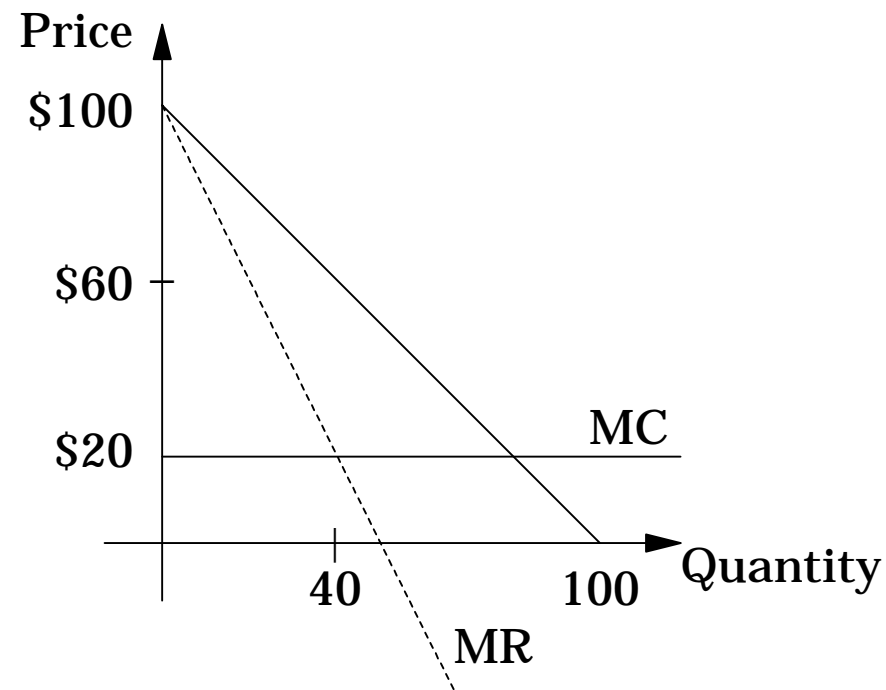
- How did your game evolve?
- What signals did you send? How? Were they effective? Consequences?
- What did the other side do? Why — what did they mean? Your response?
- What patterns of play can you see across the score sheet?

Dynamic Pricing Rivalry

- What should pricing rivalry mean in practice?
 - Should you compete by cutting price, trying to capture market share or should you keep prices high, and take a share of (monopoly) profits?
- Why is it important to consider the dynamics?
 - Because most interactions in most markets are repeated.

A Market With Two Firms.

- Two equally sized firms in a stable market.
- Demand curve shows annual demand.
- Firms set prices once a week.



To Defect or Not To Defect?

- Suppose two firms, Alpha and Bravo, are cooperating by charging the monopoly, joint-profit-maximising, price of \$60.
- Bravo is considering whether to continue with this pricing policy or lower price to \$40 to gain market share.
- What influences this decision?
- Bravo needs to consider what its profits will be in each case, over the likely period of interaction.
- It does two calculations:
 - Its profit if it keeps its price at \$60.
 - Its profit if it lowers its price to \$40.
- It conjectures how Alpha might respond.

The Calculations

➤ A discount rate of 0.2 percent per week.

➤ Bravo keeps price at \$60:

It should anticipate that Alpha will keep its price at \$60 for the foreseeable future:

$$\begin{aligned} \$15.38 + \frac{15.38}{1.002} + \frac{15.38}{(1.002)^2} + \frac{15.38}{(1.002)^3} \cdots \\ = \$15.38 + \frac{15.38}{0.002} = \$7705 \end{aligned}$$

➤ Bravo lowers price to \$40:

It should anticipate that Alpha will keep its price at \$60 for the first week, then drop back to \$40 in the second week:

$$\begin{aligned} \$23.08 + \frac{11.54}{1.002} + \frac{11.54}{(1.002)^2} + \frac{11.54}{(1.002)^3} \cdots \\ = \$23.08 + \frac{11.54}{0.002} = \$5793 \end{aligned}$$

➤ At some (high) discount rate, it will pay Bravo to lower its price to \$40. Why?

Profit Calculations

- Bravo's first-period weekly profit if defecting (\$40) and undercutting Alpha:

$$\pi_{\text{annual}} = \$40 \times 60 - \$20 \times 60 = \$2400 - \$1200 = \$1200$$

$$\therefore \frac{\$1200}{52} = \$23.08 \text{ profit per week}$$

- Bravo's second-period weekly profit once Alpha reduces its price to \$40 too:

$$\pi_{\text{annual}} = \frac{\$40 \times 60 - \$20 \times 60}{2} = \frac{\$1200}{2} = \$600$$

$$\therefore \frac{\$600}{52} = \$11.54 \text{ profit per week}$$

- Bravo's weekly profit if both Bravo and Alpha keep their prices at \$60:

$$\pi_{\text{annual}} = \frac{\$60 \times 40 - \$20 \times 40}{2} = \frac{\$1600}{2} = \$800$$

$$\therefore \frac{\$800}{52} = \$15.38 \text{ profit per week}$$

To D or not to D

- Need to consider more than just one period's profit
 - *Look forward and reason backwards*
- Depends on:
 - each firm's pricing *strategy* (what to do, how to respond)
 - each firm's *expectations* of its rivals' strategies
 - the *discount rate* and the time horizon
- Some general concerns:
 - How quickly can my rivals respond?
 - What is the difference between defection profits versus monopoly profits?
 - Will my actions in this market affect other markets?

Coordinating an Equilibrium

- How do firms decide on a price and stick to it?
- Firms must coordinate on a strategy
 - A collusive agreement would achieve this ... but it's illegal

A Scenario

- Suppose you are meeting a friend in Paris on the 6th of June next.
- You don't have a time or a specific place picked out — just the day.
- You don't have their email address or mobile number.
- Where will you wait?
- And at what time?

Focal Points

- Firms need a *focal point* — a strategy so compelling that it is natural to adopt and expect others to adopt
 - Can be facilitated by traditions and conventions
- Tit-For-Tat is such a strategy (remember, you met it in MMP)
 - a variation of the “eye-for-an-eye” rule of behaviour
 - cooperation in the first period (nice),
then mimic your rival’s action from the previous period

Four Attributes for an Effective Strategy

- Clarity: it's easy to recognise and follow.
- Niceness: it starts out cooperating.
- Provocability: one defection and you're on.
- Forgiving: if your rival cooperates, then you relent.

An Ideal Strategy?

- Tit-For-Tat manages to encourage cooperation wherever possible, but avoids exploitation.
- Flaws?
 - Misperceptions costly: mistakes “echo” back and forth
 - No way of saying “enough is enough”
 - And what if there is more than one other player?
- Other possibilities?
 - The Grim Strategy: cooperate until the other defects, then defect for all eternity.
 - Tit for Two Tats: cooperate until the other player has defected twice in a row, then defect until the other cooperates.
 - Tat for Two Tits: need two successive cooperates by the other player to stop defecting.
 - Always Defect: you bastard!

Price Competition

So far we have discussed:

- When should a firm match the price of a rival, and when should it not?
- How do repeated interactions with rivals affect a firm's decisions?

Now:

- A common pitfall.
- Which conditions influence the intensity of price competition?
- What is the value of committing to match any prices charged by rivals?
- Why are firms in some markets able to coordinate prices while others engage in price wars?

A Sealed-Bid Auction Exercise

- Five teams will bid for a cheque of unknown worth.
- Each team will be given a private estimate of \$ X , the actual value of the cheque.
- Estimates are $X - \$4$, $X - \$2$, X , $X + \$2$, $X + \$4$
- Choose a name for your team and write your bid (secretly) down and hand it in.
- There are two separate cheques and two groups of bidding teams: quite independent.
- Absolutely no communication among teams!

Thinking through the exercise.

What if your team has an estimate for the true value of \$20k (and X is in thousands)?

If you knew all five estimates, then you could infer the value.

But all you know is that X , the true value, could be between \$16k and \$24k.

You know that \$20k is on average correct — an equal chance of being too high or too low — so you might choose to bid \$20k less \$2k, to reap a \$2k windfall if you win.

But if each team bids its estimate less \$2k, then the winner is the team with the highest estimate, $X + \$4$, who will bid $X + \$2$, to make a loss of \$2k: the *winner's curse*.

The estimates are correct on average, but the winner is not selected at random:

The good news: you won!

The bad news: you paid too much.

Anticipate the Winner's Curse.

Your team could anticipate the winner's curse's effects beforehand, by presuming yours is the highest estimate and so will win.

When incorrect, this presumption costs nothing since another bidder wins; when correct, the winner's curse is avoided.

If \$20k is the highest estimate, then \$ X is \$16k and your team could bid \$15k, for a windfall of \$1k.

If all others reason likewise and subtract \$5k from their estimates, then your team will make \$1k when its is the highest estimate, and nothing at other times.

What to do.

In the face of the winner's curse, rational bidding requires discounting one's own estimate.

The winner's curse is especially likely when the item or contract being bid for has no special value to any bidder (when it has a *common value*).

Holds too for less artificial auctions. Any actual common-value auction is more complicated.

To avoid the winner's curse, anticipate it.

Shade your bid below your expected value (when buying), to avoid the bad news.

When selling, beware of asking too little in your sealed bid.

The Winner's Curse is pervasive (not just in formal bidding).

The tendency for cost overruns if the decision-maker doesn't understand the winner's curse:

- A project will be accepted if the PV of $(B - C)$ is positive, and rejected otherwise, so a project with underestimated costs C is more likely to go ahead, and cost overruns are likely.
- Likewise with overestimates of revenues R .

Is the winner's curse real? Do people sometimes lose by overestimating values?

Yes, but repeated auctions will allow bidders to learn from experience, or exit.

e.g. Oil companies have a powerful incentive not to make systematic errors in bidding, and evidence suggests a normal rate of return from offshore oil tracts.

How does Market Structure affect Sustainability of Cooperation?

- Market concentration (number and size of firms)
 - greater concentration *implies* greater benefits from cooperating
- Reaction speed, detection lags
 - the greater the speed of reaction, the easier to sustain cooperation
- Why would a firm have a delayed response to rivals' actions?
 - Infrequent interaction
 - Lags in confirming rivals' prices
 - Ambiguities in identifying who is cutting price
 - Difficulties in sorting out market effects from rivals' actions' effects
- Multi-market contact:
 - Cooperation may be easier because of potential for retaliation in other markets

Which Structural Conditions affect Speed of Response?

- Market concentration
 - greater concentration means lower monitoring costs
- Lumpiness of orders
 - long response lags
- Information about sales transactions
 - private information
- Number and size of buyers
 - buyers' incentives to play sellers off against each other
- Volatility of demand and cost conditions
 - harder to detect price cutting

Firms' Practices to Facilitate Pricing Cooperation

- Advanced announcement of price changes
- Price leadership
- Most-favoured customer clauses
- Uniform delivery prices
- Strategic use of inventories and order backlogs

Most-favoured-customer (MFC) clauses.

Under a MFC clause, a supplier undertakes to give the favoured customer (MFC) a price at least as low as the best price given to its other customers. (Remember meeting them in MMP.)

So a discount to any customer requires a discount to the MFC too.

MFC clauses can be retrospective or contemporaneous.

How do MFCs change the game?

They:

- make discounting “expensive” (the *price effect*)
∴ there is a tendency for prices to remain both rigid and higher
- facilitate price-fixing arrangements across customers by acting as a signalling mechanism (*collusion effect*)
- raise barriers to entry (*entry effect*)

MFC:

The price effect:

- a supplier has less incentive to negotiate prices with individual customers
 - customers, equally, have less incentive to negotiate price reductions since their rivals would also benefit
 - guarantees cost parity, and discourages selective price cutting by suppliers, maintaining higher prices
- ∴ a credible commitment not to compete on price

The collusion effect:

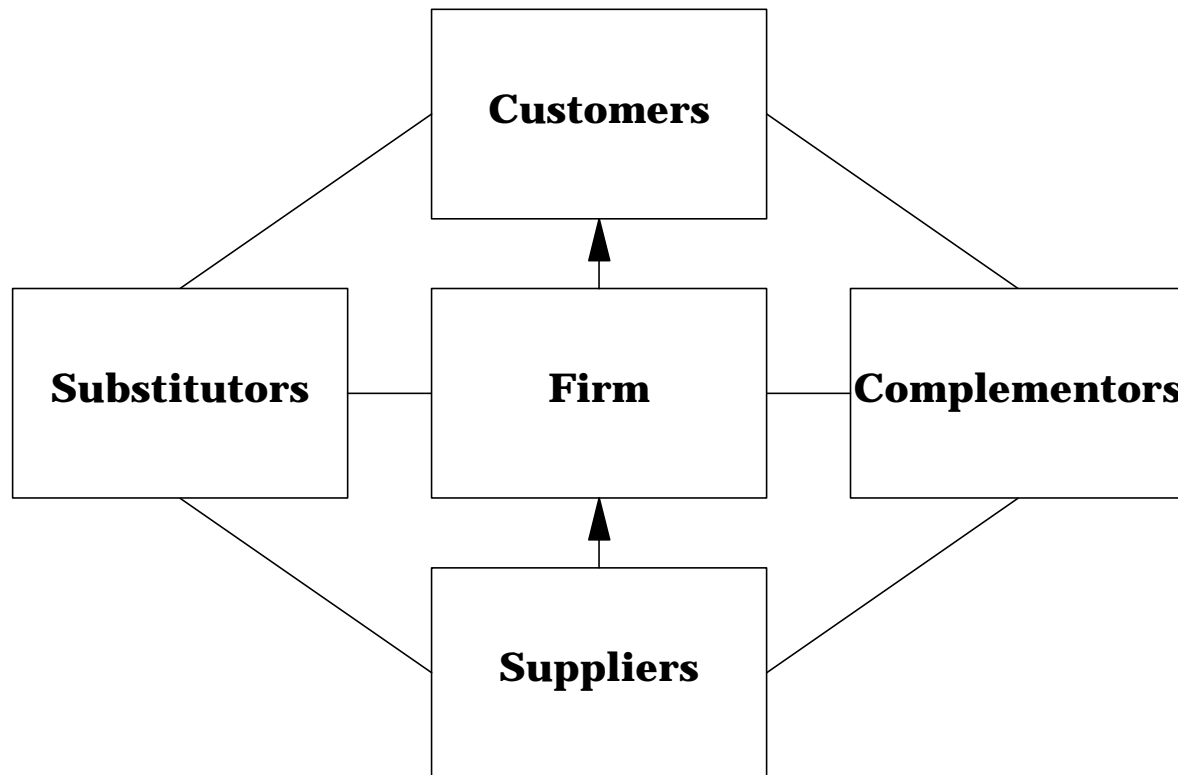
- suppliers will less likely cheat on MFC clause by acceding to customer pressure to lower their prices
- MFC clauses facilitate competitor coordination by signalling commitment to less-aggressive conduct, so allowing industry prices to rise

Co-opetition

- Is “rivalry” always the best way to approach business interactions?
- Cooperation: coming together to create value
- Competition: dividing up the “pie” of value created
- Requires a new way of thinking about other players in the market
- Framework: a Value Net

A Value Net

- A Value Net shows all the players in the game and the interdependencies between them (as you might have seen in MMP):



Complementors v. competitors. (Customers)

A firm is your **competitor** if

if customers value your product *less* when they have the other firm's product than when they have your product alone.

e.g.?

A firm is your **complementor** if

if customers value your product *more* when they have the other firm's product than when they have your product alone.

e.g.?

Complementors v. competitors. (Suppliers)

A firm is your **competitor** if

if it's *less* attractive for a supplier to provide resources to you when it's also supplying the other firm than when it's supplying you alone.

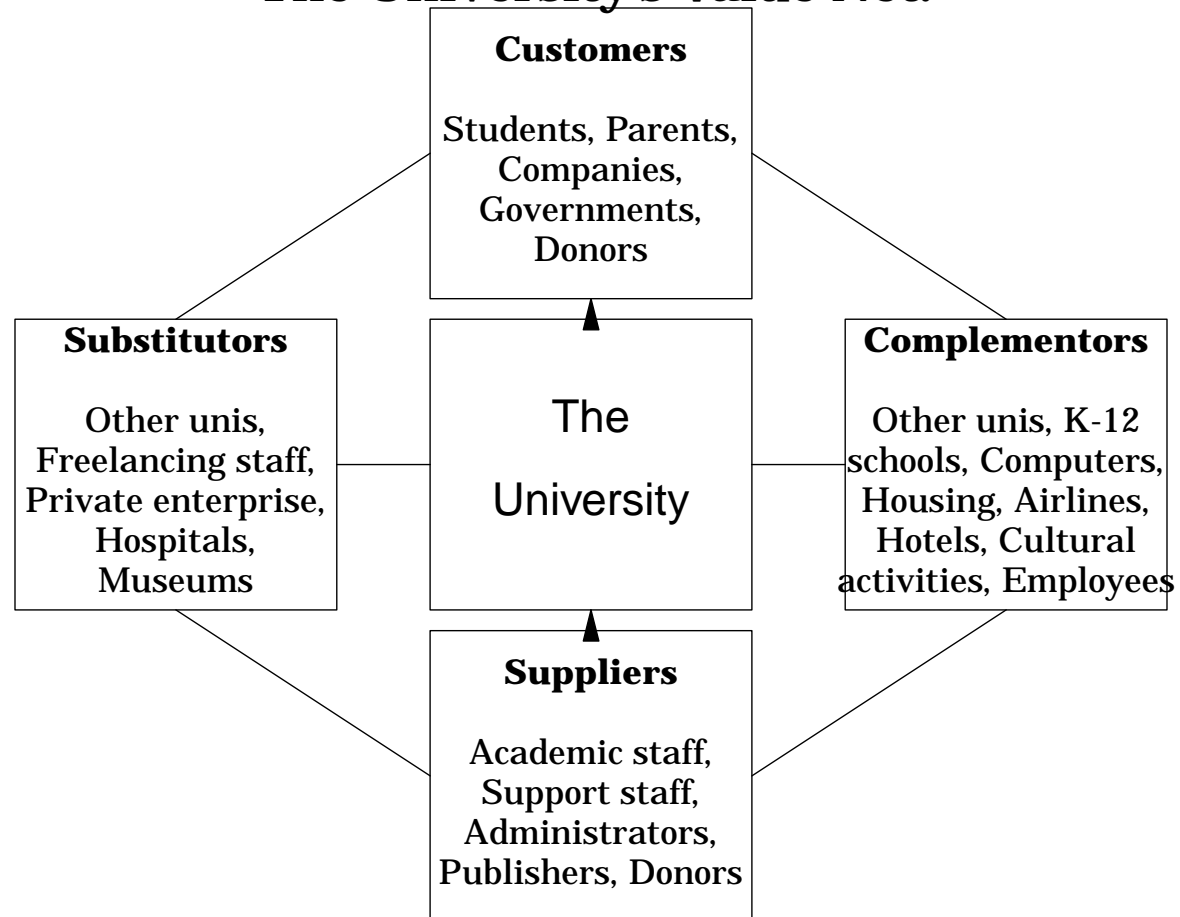
e.g.

A firm is your **complementor** if

if it's *more* attractive for a supplier to provide resources to you when it's also supplying the other firm than when it's supplying you alone.

e.g.

The University's Value Net.



The Value Net is Useful.

The Value Net is:

- a complete map of a firm's relationships
- a counter to limited thinking (e.g. “outsmart the competition”)
- a prompt to understand a firm “outside-in”
- a shared template for discussions of strategy.

Competition or Cooperation?

Kodak and Fuji create the Advanced Photo System (APS):

➤ Cooperation:

- Creating a new market for an easy-to-use, flexible camera system
- Joint product development
- Joint development of processing systems

➤ Competition:

- Competing for sales *within* the market
- Continuing competition in traditional markets
♥ but create potential for cooperation

The Bottom Line

- Price competition may be more harmful than helpful
 - Weigh benefits versus costs
- Look forwards and reason backwards
- Notice the signals from other players in the game, without explicit collusion
- Co-opetition: it's valuable to think about your rivals as potential complementors.

Plus blank Value Net