

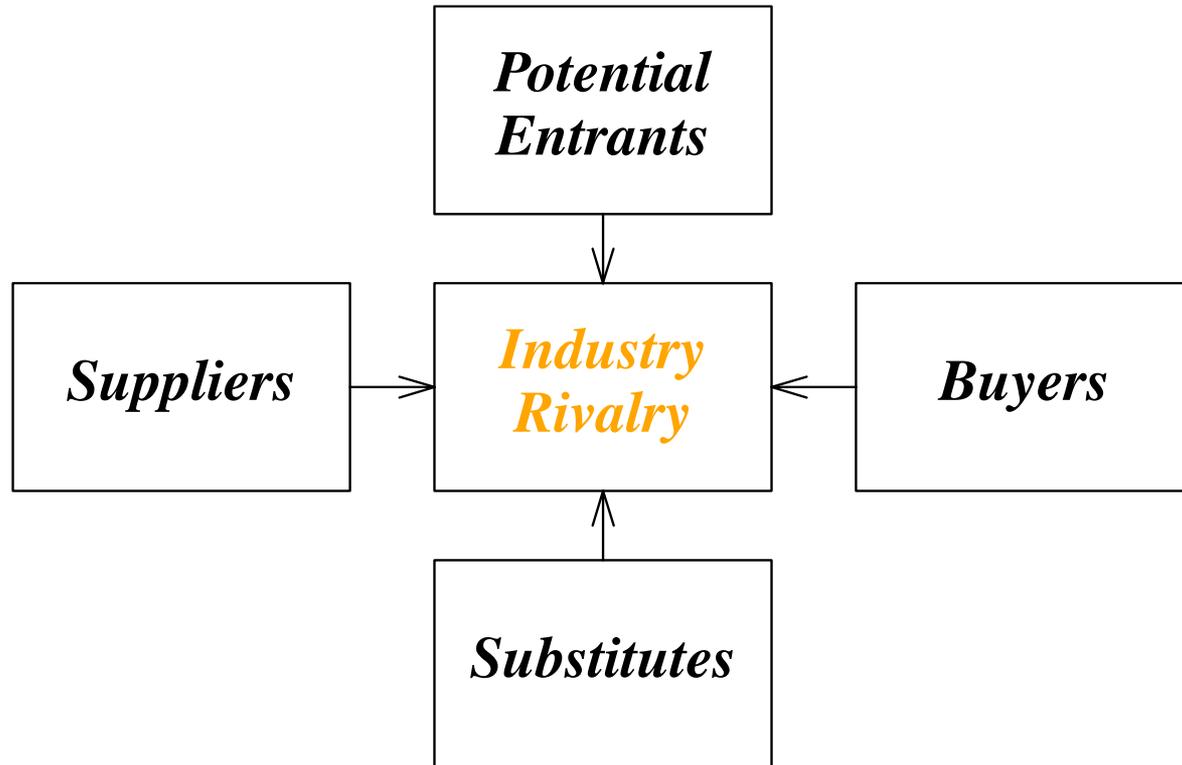
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# **SM 1: RIVALRY**

## **Professor Robert Marks**

- 1. Why Rivalry?**
- 2. Goal is the Bottom Line: a Duopoly Game.**
- 3. Pricing is a Prisoner's Dilemma.**
- 4. Reputation in Rivalry.**
- 5. Market Structure.**
- 6. Changing the Rules.**

## Porter's Five Forces:



**Forces/Threats Driving Industry Competition**

## Industry Rivalry

### *1. Who Is Your Rival?*

- **the potential entrant**
  - to the industry
  - to the segment
- **established firms**
  - in your segment or not?

### *2. How do you compete?*

- **innovation**
- **pricing**
- **capacity**
- **advertising/marketing**
- **alliances**
- **differentiation**

## *Rivalry*

- **What is rivalry?**
  - **What forms 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 case study of rivalry: Boeing v. Airbus**

## ***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)**

## Repetition and Reputation

- **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, by developing a *reputation*.**

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

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## ***A Case: The Post v. The News.***

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

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

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## What happened?

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.

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***Question: Left or Right?***

**You can choose Left or Right:**

**Profits:**

	<i>Left</i>	<i>Right</i>
<b>You</b>	<b>\$40 m</b>	<b>\$80 m</b>
<b>Rival</b>	<b>\$20 m</b>	<b>\$160 m</b>

## ***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 lower 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.**

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## ***Demand For The Product***

**The industry demand for the product is as follows:**

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### ***Industry Demand***

#### ***Price      Quantity***

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<b>\$9</b>	<b>0</b>
<b>\$8</b>	<b>1</b>
<b>\$7</b>	<b>2</b>
<b>\$6</b>	<b>3</b>
<b>\$5</b>	<b>4</b>
<b>\$4</b>	<b>5</b>
<b>\$3</b>	<b>6</b>
<b>\$2</b>	<b>7</b>
<b>\$1</b>	<b>8</b>
<b>\$0</b>	<b>9</b>

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## ***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  $\pi$  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.**

## Dynamic Pricing Rivalry

**Firms compete again and again: it's not just once off.**

**Actions that might have short-run benefits may become harmful in a repeated situation in which rivals can react tomorrow to an action made today.**

**A price cut today to steal market share from rivals may result in matching price cuts tomorrow by the rivals, leading eventually to no changes in market shares, but lower profits all round: *a price war*.**

**This interaction is very similar to a *repeated PD*.**

## Reminder: The Prisoner's Dilemma (the lower the better)

		<i>Kelly</i>	
		Spill	Mum
<i>Ned</i>	Spill	8, 8	0, 20
	Mum	20, 0	1, 1

Years of prison (Ned, Kelly).

- **Spill the beans (Defect) is better than keeping Mum (Cooperate) for Ned, whatever he believes Kelly will do.**
- ∴ **Spill is a *dominant strategy* for Ned, and Mum is a *dominated strategy*.**
- **Likewise for Kelly.**

## ***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**
- **Firms must find a *focal point* — a strategy so compelling that it would be natural for all firms to expect others to adopt it.**

**Highly context- or situation-specific.**

**Difficult to coordinate in turbulent markets.**

**Sometimes facilitated by traditions and conventions.**

## ***A Scenario***

- **Suppose you are meeting a friend in Paris on the 6th of June next.**
- **You know the time and the day, but not the place.**
- **You don't have their email address or mobile number.**
- **Where will you wait?**
- **(Write it down.)**

## ***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**

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## ***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 its rival cooperates, then it relents.**
- ∴ Not easily exploited!***

## ***An Ideal Strategy?***

- **Tit-For-Tat manages to encourage cooperation wherever possible, but avoids exploitation.**
- **But 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!

## Signals

**We assume others in our industry know what we mean:**

- **despite noise,**
- **despite ambiguity,**  
**(“I thought you would see that I was punishing them, not you”)**
- **despite possible inconsistency.**

## **Case: Price wars.**

### ***Case: David Jones***

## **Case: How misunderstanding can lead to price wars**

**It may be that many real-life price wars are not started by deliberate attempts by one firm to steal business from its competitors, but instead flow from misreads and misunderstanding of rivals' behaviour.**

**Such as Besanko's tyre manufacturers (in the handout).**

## More Questions.

- **What conditions influence the intensity of price competition in a market?**
- **Why do firms in some markets seem able to coordinate their pricing behaviour and to avoid price wars, while in other markets intense price competition is the norm?**
- **What is the value, if any, of policies under which the firm commits to matching the prices charged by its rivals?**
- **When should a firm match the price of a rival, and when should it do its own thing?**

**Price competition is a dynamic, strategic process: a firm's decisions will affect how rivals and the firm itself behave in the future.**

- **What if the *NY News* had understood the *NY Post's* intentions better in the example above (or the Sydney interaction several years earlier)?**

## ***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:**

- **An Exercise: Boeing and Airbus (from JGD)**
- **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?**

## **Shared Beliefs in the Management Team**

### **Critical beliefs within the firm:**

- **How does this business work?**
- **What will your rivals do? (reputation)**
- **How do you shape your rivals' expectations about you? (signalling)**

## **Your Firm's Reputation**

- **What your rivals expect you to do.**
- **Extrapolated from past behaviour.**
- **Reputation as an asset or liability?**

## **Syndicate Exercise: Boeing v. Airbus (from JGD)**

## Strategic Instability

**Markets shift from calm coexistence (“live and let live”, or it could be rivalrous dance) to turbulent rivalry:**

- if a firm behaves in a way inconsistent with its reputation,**
- a declining leader who holds the line,**
- difficult (costly) to reestablish mutually consistent expectations.**

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## Reputations as Assets

- **A core business**
- **Cut-throat pricing**
- **Has lower ROI requirements than we do**
- **Dangerous when bitten**
- **Irrational!**

## **One Approach**

**Seek stability, but conditional (implicit threats and promises).**

**Dealing with disturbances or shocks:**

- the oil shocks
- wars
- 9/11

**Envisioning the outcome:**

- a modus vivendi
- or extinction

**A route to a stable equilibrium?**

- signalling
- reputation
- focal points

## Common Patterns

### **High product differentiation (brands):**

- sticky prices
- absorb volume swings

### **Established customers are loyal, but new customers?**

- restrict any price war to segment?

### **Low product differentiation and high “fixed” costs:**

- incentives to sell at any margin above avoidable cash cost
- differences in commitment
- reputation (again)

## **How market structure affects the sustainability of cooperative pricing**

**Under certain market structures firms will find it difficult to coordinate on a focal strategy, and their behaviour may be influenced by market structure.**

**Four conditions of market structure that may affect the attainment of cooperative pricing and competitive stability:**

- 1. Market concentration (the number and distribution of firms),**
- 2. Structural conditions that affect reaction speeds and detection lags,**
- 3. Asymmetries among firms,**
- 4. Multi-market contact between firms.**

## **Conditions for collusion.**

**Four reasons why a firm's response to its rivals' actions might be delayed:**

- 1. infrequent interactions,**
- 2. lags in confirming rivals' prices**
- 3. ambiguities in identifying exactly who (among a group) is cutting price**
- 4. difficulties in separating falls in sales due to rivals' stealing from those due to unanticipated contractions in market demand.**

**All of these slow the firm's reaction time, and so the effectiveness of retaliatory price cuts against defecting firms.**

## **Moderating Influences**

**Several structural conditions affect the importance of these factors:**

- **Market concentration**
- **Lumpiness of Orders**
- **Information about sales transactions**
- **The number and size of buyers**
- **Volatility of demand and cost conditions**

## ***Firms' Practices to Facilitate Pricing Cooperation***

**Firms themselves can facilitate cooperative pricing by:**

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

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## ***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*)**

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## ***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.**
- **Your firm's reputation can be both an asset and a liability in matters of industry rivalry.**