Industrial Organization

A Brief Introduction

The Extremes: Perfect Competition and Monopoly

Week 1

Practical Sessions

FIRST THINGS FIRST…

Email: ruben.bento@novasbe.pt

Office Hours: Thursday at 5pm or by appointment (send me an email if you want to schedule a meeting)

Moodle password: IOSPRING2025

Practical Sessions

TIMELINE

Topic	Exercises	Tuesday Classes	Thursday Class
1. The Extremes: Perfect Competition and Monopoly	**Section 1 – 1, 3**	February 11	February 13
2. Market Structure (Measures of Concentration and Volatility) 3. Game Theory: Static Games	**Section 2 – 1** **Section 3 – 1, 3**	February 18	February 20
3. Game Theory: Dynamic Games 4.1. Dominant Firm	**Section 3 – 5, 6** **Section 4.1 – 2**	February 25	February 27
4.1. Monopolistic Competition *(+ Intro to Cournot - TBD)*	**Section 4.1 – 4**	March 11	March 6
4.2. Cournot Model	**Section 4.2 – 1, 4, 8**	March 18	March 13
4.2. Cournot Model 4.3. Stackelberg Model	**Section 4.2 – 6** **Section 4.3 – 1**	April 1	April 3
4.4. Bertrand Model and Competition in Prices with Diff. Products	**Section 4.4 – 9, 10**	April 8	April 10
5. Market Power (Collusion)	**Section 5 – 1, 3**	April 15	**May 8**
5. Market Power (Collusion II)	**Slides Exercises**	April 22	**May 13**
Midterm Revision	**Relevant Exercises**	April 29	April 24
Midterm	---------	**May 5, 5:30 PM**	
6. Barriers to Entry	**Section 6 – 1 and/or 3**	11 May	May 15
Normal Exam	---------	**May 24, 8:30 AM**	
Resit Exam	---------	**June 21, 1:30 PM**	

On Moodle you can find:

- The IO Exercise Book
- Practical classes slides
- Recommended readings ("Material")
- Past Midterms
- Past Exams

Introduction

WHAT IS INDUSTRIAL ORGANIZATION?

INDUSTRIAL ORGANIZATION IS THE FIELD OF ECONOMICS THAT STUDIES THE BEHAVIOUR OF FIRMS IN IMPERFECTLY COMPETITIVE MARKETS AS WELL AS THE PERFORMANCE OF SUCH MARKETS

(SOME OF THE) CENTRAL QUESTIONS OF IO:

- How do markets function?
- Why do markets function in a given way?
- Do firms possess market power?
- What are the consequences of market power?
- What is the role of public policy regarding market power?

Perfect Competition

STRUCTURAL CONDITIONS

- ✓ Homogeneous product
- ✓ Free entry and exit ($\pi^{LR} = 0$)
- ✓ Perfect information
- ✓ Many buyers and sellers

All agents are **price-takers**:
each agent individually is small enough and is not able to influence the market price

Perfect Competition

FIRM'S OPTIMAL DECISION

Goal of all firms → Maximize profits

EQUILIBRIUM PRICE
no one can influence it!

$$\boldsymbol{Max\ Profits = Total\ Revenues - Total\ costs \leftrightarrow \pi = P^* \times Q - TC(Q)}$$

To solve this, we want to set the derivative of profits with respect to Q equal to zero:

$$\frac{d\pi}{dQ} = 0 \leftrightarrow P^* - MC = 0 \leftrightarrow P = MC$$

The firm will produce the Q that ensures the MC is equal to the market price

Perfect Competition

EXERCISE

1. Consider the industry of Portuguese footwear, which is a perfectly competitive one with a demand function given by $P = a - bQ$. In this market every firm sells the same product and they all have the same cost structure, $TC = cQ$.

(a) Define the long-run equilibrium price, quantity (aggregate and firm level) and profit.

(b) Draw and calculate the consumer surplus, the producer surplus and the total welfare.

Monopoly

A single firm that chooses its price!

$$\boldsymbol{Profits = Total\ Revenues - Total\ costs \leftrightarrow \pi = TR(Q) - TC(Q)}$$

$$\boldsymbol{max\ \pi = TR(Q) - TC(Q)}$$

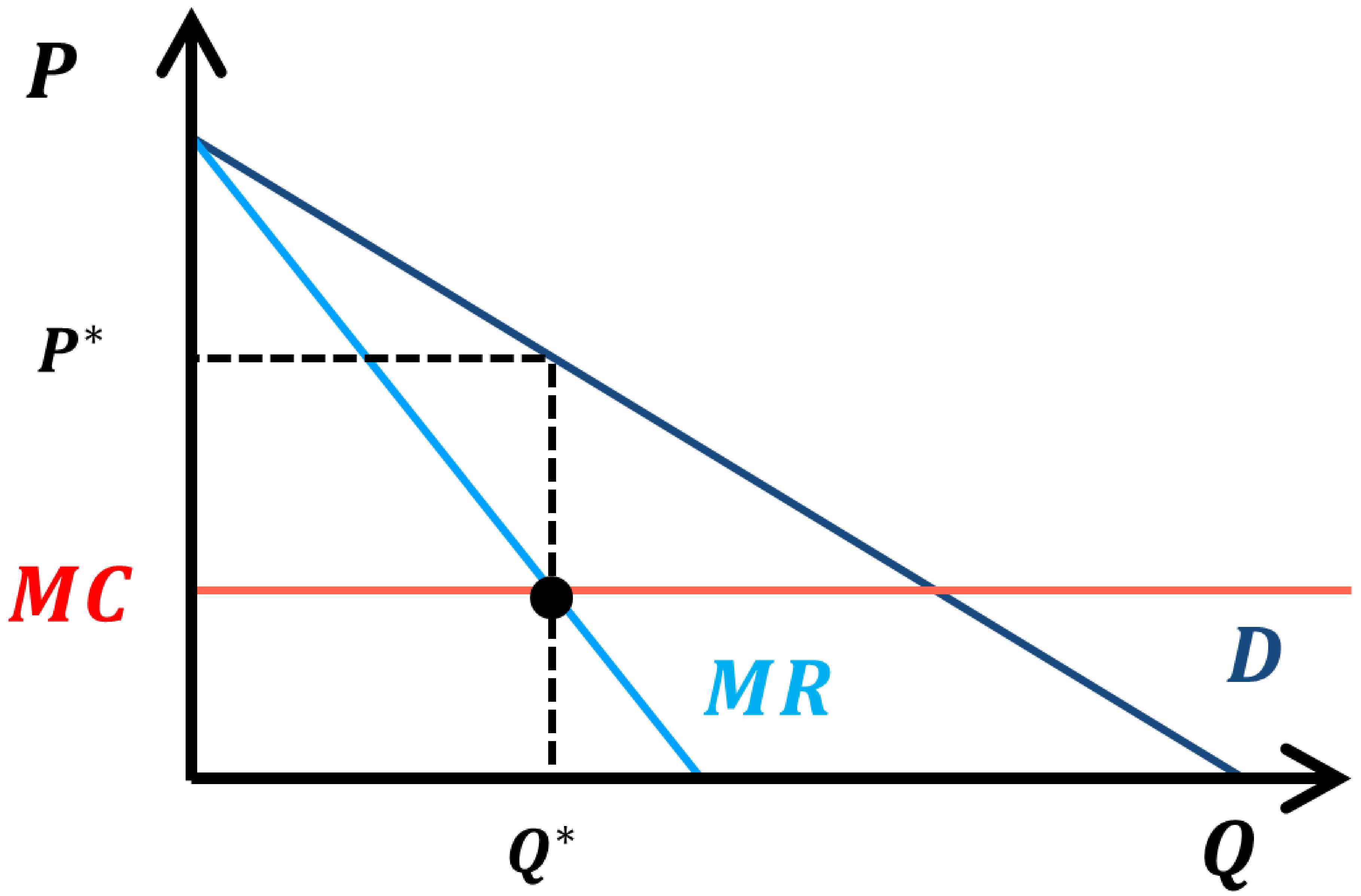
$$\boldsymbol{\frac{d\pi}{dQ} = 0 \leftrightarrow \underbrace{TR'}_{\text{Marginal Revenue}} - \underbrace{TC'}_{\text{Marginal Cost}} = 0 \leftrightarrow MR = MC}$$

Monopoly

A single firm that chooses its price!

$$\frac{d\pi}{dQ} = 0 \leftrightarrow TR' - TC' = 0 \leftrightarrow MR = MC$$

Marginal Revenue   Marginal Cost



Monopoly

EXERCISE

3. Consider a market supplied by a single firm, The Monopolist. This company faces a market demand of $P = a - bQ$ and it has a total cost $TC = cQ$.

(a) Formalize the problem of the Monopolist and find the equilibrium quantity and price.

(b) Draw and calculate the consumer surplus, the producer surplus and the total welfare.

(c) Compare the results of the Perfect Competition exercise (first one in this section) and point out the effect over: i. Price, ii. Total quantity, iii. Firm profits, iv. Consumer Surplus, v. Producer Surplus, vi. Total welfare.

(d) Draw and calculate the Deadweight loss (excess burden) created by this monopoly.

The extremes compared

	Monopoly	**Competitive market**
Behaviour	Sets price and quantity to maximize profits ("Price-maker")	Takes market determined price as given and chooses quantity to maximizes profits ("Price-takers")
Optimal decision	$MR = MC$	$P = MC$
Efficiency	Pareto inefficient ($DWL > 0$)	Pareto efficient ($DWL = 0$)

Recommended readings

CABRAL, LUIS MB. INTRODUCTION TO INDUSTRIAL ORGANIZATION. MIT PRESS, 2017.

- Chapter 1: What is Industrial Organization
- Chapter 5.1: Monopoly
- Chapter 6.1: Perfect Competition
- Chapter 6.2: From Theory to Stylized Facts
- Chapter 6.3: Competitive Selection