Introduction to bachelor course Competition Policy and Regulation

1 This lecture

- three parts
  - first, how the course is organized
  - then, introduction to competition poliyc
  - then, first experience with python
  - text for the couse: Massimo Motta, *Competition policy: Theory and practice*, Cambridge University Press, 2004.

1.1 expectations

- we expect you to prepare each lecture
- watch video lecture beforehand
- prepare exercises to be discussed in class
- follow the datacamp lectures on python

1.2 grade

- your grade is a weighted average of
  - 2 assignments
  - 1 final exam
  - class and datacamp participation
- assignments are mandatory and involve programming in python
- class participation is mandatory and involves exercises from previous exams
- part of the class participation is finishing the datacamp course on time

- grades for assignments and class participation can only be used this academic year

1.3 assignments

- assignments can be done alone or in a team of max 3 students
- for the programming assignments, you will do simulations
- during the lectures, we will show you some examples of programming in python
- attend (on the web) the datacamp courses on python and finish the introductory course on time!
- we know this is new for (most of) you
- it's also new to some of us! 10 years ago, few people were using python!
- however, assignments are made independently by each team

1.4 python

- good idea to look into python in the coming weeks
- when you get stuck, you can google
- but some basic knowledge saves you a lot of time!
- with jupyter notebooks you can program and explain what you do in the same file
- learn a bit of markdown and latex when you need it (googling is typically enough to find the righ command)

1.5 details

- The course syllabus gives further details and an outline of the lectures
- Always refer back to it!

2 Competition law

2.1 EU law

- EU law is structured as follows:
    - **Article 101**: agreements between firms
        - *horizontal agreements*: cartels, collusion, joint ventures
        - *vertical agreements*: manufacturer and wholesaler or wholesaler and retailer
    - **Article 102**: abuse of a dominant position
        - price discrimination, predatory behavior, tying and bundling, refusal to supply
    - **Merger Regulation**: when one firm plans to acquire another firm, the Commission has to be notified

2.2 why needed?

- economists tend to believe that markets work well
- welfare theorems: Pareto efficient allocations
- why do we need a competition authority (CA)?

2.3 imperfections

- welfare theorems assume firms are price takers
- in real world firms have (market) power to set prices
- first year micro: monopolist setting prices leads to deadweight loss
- under total welfare standard: welfare loss equals deadweight loss (DWL)
- under consumer welfare standard: loss equals $DWL + PS$
- CA tries to prevent monopolies from emerging through mergers
- when firm is dominant, CA tries to prevent firm from abusing this position

2.4 objective CA

- EU and US tend to put more emphasis on CS than on PS
    - firms can fight for themselves
    - harder to organize consumers because of free riding problems
    - against: consumers are also shareholders
- EU every now and again states as a goal promotion of market integration
    - political objective; hard to formalize in economics
    - EU forbids price discrimination across national borders
    - but from economic point of view can be welfare enhancing

3 market power

3.1 efficiency

- Nickell (JPE, 1996): firms with market power are less efficient
    - with market power, less reason to "worry"
    - moral hazard: more competitive the market, firms and managers work harder to survive
    - selection: with market power, inefficient firm can survive; cannot happen in a competitive market
- Aghion et. al (QJE, 2005) find that more competition leads to more innovation
- Michael Porter (1990): competition is necessary to stimulate firms to innovate

3.2 not always bad

- patents give firms incentives to innovate
    - ex post we lose welfare but we gain ex ante through the introduction of products

- Government can regulate a monopolist: ACM (formerly, OPTA) regulates KPN
- Coase: durable good monopolist competes with itself
    - if monopolist cannot commit, reduce prices over time
    - $p = m\,c$ with monopoly
- contestable market: firm may be only seller but $p < p^m$
    - potential entrants discipline the firm
    - barrier to entry is formed by sunk entry cost (not fixed cost)
    - taxi market: entry cost is not the price of a mercedes; can be resold

3.3 Too competitive?

- Mankiw and Whinston (RAND, 1986): two externalities market entry
    - *business stealing effect*: excess entry
    - *appropriability effect*: too few firms enter

3.4 create power

- *Outperform other firms*:
    - $n \geq 2$ firms compete in prices, i's cost function: $C(q_i) = c_i\,q_i$
    - $c_1 \leq c_2 \leq ... \leq c_n$
    - $c_1 < c_2$ implies 1 is monopolist, $p_1 = c_2$
- *switching costs*: offer frequent flyer miles or coupons for loyal customers
    - if customer gathered enough miles, optimal to keep on using this airline
    - though consumers love loyalty schemes, they create market power and lead to higher prices

- *network effects*: network effects keep incumbents in the market when there are superior (potential) entrants
- *exclude rivals*:
    - incumbent beer brewer sells to pubs and restaurants if they only sell incumbent's beer brands
    - raises entry cost for newcomers

3.5 network effects

- consumers value both intrinsic quality of product and how many other people use it
    - this is different from consuming ice-cream
    - when you decide on your operating system (Linux, Mac, Windows); relevant how many of your friends use the same os
    - utility good i: $u_i = v_i + \nu(n_i) - p_i$
    - 1 is incumbent product with $n_1 > 0$
    - new product 2 with $v_2 > v_1$ but nobody uses it yet
    - even with $p_2 = c_2 < p_1$ can be that $v_1 + \nu(n_1) - p_1 > v_2 + \nu(0) - p_2$
- network effect gives incumbent market power
    - small differences at the start lead to completely different outcomes

4 defining markets

4.1 relevant market

- not much damage can be done by firms that are small players
    - if two firms with each a market share of 1 percent want to merge, no reason to block such a merger
    - but when Microsoft or Google act suspiciously, we do worry

- market share is important in competition policy cases
- market share = firm's revenue divided by total market revenue
- but what is the total market?
    - if you sell apples, is the relevant market apples or fruit?
- economists do not tend to worry about relevant market
    - find out directly whether a merger leads to higher prices; whether a practice is welfare reducing
- European Courts do require a definition of the relevant market

4.2 procedure

- guiding principle: "a relevant market is worth monopolizing"
- relevant market is a collection of products and regions such that a (hypothetical) monopolist would be able to increase prices profitably (but from which benchmark?)
    - contains all substitute products and regions which provide competitive constraint on the products and regions under consideration
- you wonder whether bananas in the Netherlands form a relevant market:
    - ask: if there would be a (hypothetical) monopolist on the Dutch banana market, would she be able to *profitably* raise prices by 5 to 10 percent (*ceteris paribus*: assuming all other prices remain constant)?
    - if so, bananas in the Netherlands is a relevant market (perhaps bananas in Brabant is already a relevant market)
    - if not, expand the market and see whether on this expanded market a hypothetical monopolist would be able to profitable raise prices

4.3 substitution

- *demand side substitution*: if consumers would switch from bananas to kiwis after the price increase, the question becomes whether bananas and kiwis together form a relevant market
- *supply side substitution*: if suppliers of banana liquor would start to sell bananas after the price increase, question becomes whether the combined market of bananas and banana liquor form a relevant market
- *geographic market*: if consumers would start to buy bananas in Belgium after the price increase, the question becomes whether bananas in the Netherlands and Belgium form a relevant market
- question is: is the market under consideration worth monopolizing?
- relevant market is smallest set of products worth monopolizing

4.4 SSNIP test

- this is known as SSNIP test: small but significant non-transitory increase in prices
    - "small but significant" is often taken to mean 5-10%
    - "non-transitory": if this could be profitably done for 5 days only, the market is not worth monopolizing
- in economic terms, relevant question concerns elasticities
    - if price of x is increased by 10%, by which percentage does demand fall? e.g. because consumers buy outside the region
    - if drop in demand is big, price rise is not profitable; market for x is not worth monopolizing
    - or by which percentage does supply increase?

4.5 fallacies

- applying SSNIP test can lead to two "famous mistakes":
    - *toothless fallacy*: marginal vs average consumer
    - *cellophane fallacy*: starting point for price increase

4.6 toothless fallacy

- Commission in United Brands case: defining relevant market on the basis of the average consumer
- Commission argued that very young and very old (those without teeth) did not consider other fruit a substitute for bananas
- Commission concluded that bananas is a relevant market
- however, when a (hypothetical) monopolist raises its price, question is not whether average consumer moves away, but whether marginal consumer substitutes away
- if enough consumers *at the margin* substitute away, price increase is not profitable (although a number of consumer may be captive)

4.7 other examples

- some people do not like sparkling water; for them still and sparkling water are not substitutes
    - yet, still and sparkling water are on same relevant market if enough consumers (at the margin) switch from still to sparkling if the price of still water is increased by 10%
- aftermarkets: cheap ink-jet printer of brand X but cartridges are sold by X at a high price
    - do cartridges of X form a relevant market
    - probably not: although you will be stuck if X increases price, buyers of new printers substitute away from X because its cartridges are so expensive
    - buyers of new printers are the marginal consumers
    - if enough marginal consumers switch away from X, rise in cartridge prices is not profitable
    - if so, market for X cartridges is not a relevant market

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- are Rolex and Casio watches in the same market?

- some people argue they are not because they sell at completely different prices and are of completely different quality
- correct question: do consumers at the margin switch from Rolex to Casio if price of Rolex watches is increased by 10%
- CES utility function $u(x, y) = (a\,x^{\theta} + b\,y^{\theta})^{1/\theta}$
- whether goods are substitutes is determined by θ
- if $a >> b$ then price of X will be higher than price of Y

4.8 cellophane fallacy

- SSNIP test considers price increase of 5-10%, but from which benchmark?
- depends on the question that you want to answer
- benchmark price differs between merger cases and Article 101, 102 cases
- definition of relevant market is different for different questions
- merger case: whether the merger between two firms leads to price increase
  - question is whether at current prices merged firm has enough market power to raise prices
  - benchmark price is current price on the market
- abuse of a dominant position case: current price not necessarily the right benchmark

4.9 cellophane case

- US case: Du Pont argued that cellophane was not a separate relevant market
  - empirical evidence showed that it competed closely with other packaging materials such as aluminium foil and wax paper
- Du Pont sole supplier of cellophane
- on the wider market of packaging materials it had a smaller market share
- US Supreme Court agreed that because of these other packaging materials Du Pont could not increase prices further

- from this it does not follow that Du Pont did not have market power
    - as a monopolist Du Pont had increased the price of cellophane to such an extent that other (inferior) packaging materials now became substitutes
- observation that Du Pont's cellophane did compete with these other materials strongly suggests that Du Pont did abuse its market power by charging excessive prices for cellophane

4.10 benchmark price

- in abuse case, current price level is not necessarily right benchmark for SSNIP test
- sometimes take competitive price (or the price prevailing under effective or workable competition) as a benchmark
- Du Pont as monopolist was able to raise price of cellophane profitably by 10% from the competitive price
- if you try to determine whether a firm has abused her market power by raising prices, relevant market should be determined with competitive prices as benchmark (not current prices)
- recall that a profit maximizing monopolist cannot profitably increase her price by 10% at current prices

5 concentration and market power

5.1 market share

- tendency among lawyers to interpret high market share as a signal of market power
- not necessarily correct:
    - two firms $1, 2$ producing a homogenous good
    - $p = 1 - (q_1 + q_2)$
    - firm's marginal costs: $c_1 = 0, c_2 = c < 0.5$
    - Cournot competition implies (*check*) $q_1^C = \frac{1+c}{3}$, $q_2^C = \frac{1-2c}{3}$, $p^C = \frac{1+c}{3}$

- Bertrand competition: $q_1^B = 1 - c, q_2^B = 0, p^B = c$
- Bertrand outcome is more competitive than Cournot
- Bertrand market is more concentrated than Cournot market
- lack of competition under Cournot allows less efficient firm 2 to enter
- high concentration can be sign of intense competition

5.2 summary

- in this lecture we have seen:
  - how EU competition law is structured
  - why we need CA and what its objectives are (can be)
  - what the welfare losses are due to monopoly/market power
  - why market power is not always bad
  - why high concentration does not always signal market power
  - ways in which firms create market power
  - how to define relevant market and avoid two fallacies