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# **Economic approach to two-sided markets**

## **Dutch mergers of directory services and flower auctions**

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# Overview

- **Relevant market**
- **Two-sided platforms**
- **Directory services**
- **Flower auctions**
- **Conclusion**

## Relevant market

- **Commission notice on definition of relevant market (1997):**

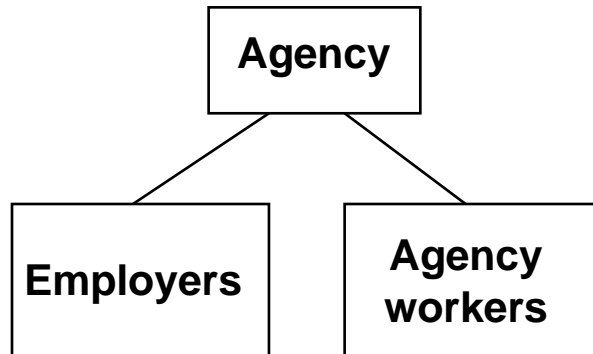
**“... The objective of defining a market in both its product and geographic dimension is to identify those actual competitors of the undertakings involved that are capable of constraining those undertakings’ behaviour and of preventing them from behaving independently of effective competitive pressure ...”**

## **SSNIP test / Hypothetical monopolist test**

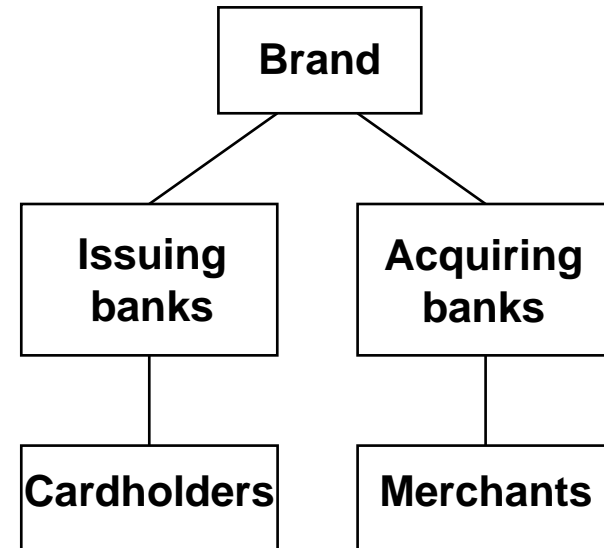
- **Relevant market is defined by the smallest set of products and geographical areas that, if they were controlled by a monopolist, could profitably be increased in price by a small significant but non-transitory amount – often taken in practice at 5 or 10 percent for a year**
- **Substitution could either be on the demand side, through customers switching products, or on the supply side, through suppliers switching production processes**

# Two examples of two-sided platforms

## Employment agencies



## Card payment systems



## Other examples and core functions of two-sided platforms

- **Other examples**

- Newspapers
- Internet search engines
- Directory services
- Magazines
- Television networks
- Auctions
- Real estate agencies
- Shopping malls
- Hospitals
- Dating agencies
- Computer operating systems
- Video game consoles
- Word processors

- **Core functions; Evans and Schmalensee (2007)**

- Audience builders to assemble eyeballs
- Matchmakers to facilitate exchange
- Cost sharers to increase efficiency

## Economic features of two-sided platforms

- **Cross-side network effects**
  - The value that a customer on one side realises from the platform depends on the number of customers on the other side, and vice versa
  - Cross-side network effects usually positive
- **The need to balance the demands of the two sides**
  - Not only the price level matters, but also the price structure
- **Chicken-and-egg problem**
  - The two different customer groups must be served simultaneously

# Profit maximising for two-sided platforms

- **Profit maximising needs to consider:**
  - Demands of both sides
  - Interrelationships between these demands
  - Direct costs of each side
  - Shared platform costs
- **Skewed pricing structures**
  - The side that is needed more receives a price break; the side that gets the most value out of access to members of the other side bears more of the costs

## Relevant market with two-sided platforms

- **Competitive constraints from cross-side network effects**
  - A price increase on one side of a two-sided platform will result in a decrease in demand on that side and through the cross-side network effects also to a decrease in demand on the other side
- **Competitive constraints on both sides of the platform matter to the analysis**
  - Analysis of price on either side of a two-sided platform in isolation may yield a distorted picture
- **A two-sided platform may face competition in different ways; Evans (2008)**
  - Newspaper v. newspaper
  - Television network v. magazine
  - Shopping mall developer v. single store
  - Microsoft Office v. Google
  - Sony's media player v. Apple's iPod
  - American Express v. Visa

# Directory services

- **European Directories / Truvo Nederland**

- Telefoongids

- Directory listing of local businesses classified by products and services provided and A-Z listing of households and businesses including contact details within a specific region
    - Both in print and online

- Gouden Gids

- Classified directory and A-Z listing of businesses both in print and online
    - A-Z listing of households only online

- Revenue comes from advertising

- Being included in classified directories and A-Z listings is free of charge
    - Printed versions are distributed for free and online access is free of charge

- **On 11 March 2008 the NMa decided that a license is required**

# Two-sidedness in directory services

- **Cross-side network effects**

- Consumers value directories for information and businesses value directories as a way to advertise to consumers
  - Rysman (2004) empirically finds cross-side network effects in the market for yellow pages in the US
- Integrated revealed preferences model submitted by parties:

$$advertising = f (use, price, \dots)$$

$$use = g (advertising, \dots)$$

$$price = h (cost, advertising, \dots)$$

- Endogeneity problem: exogenous (explanatory) variables “use” and “price” are dependent on endogenous (dependent) variable “advertising”
- NMA: the applied instrumental variable method does not solve the problem

- **Chicken-and-egg problem is barrier to entry**

- Sufficient consumers have to use a directory before businesses will be willing to advertise

## Relevant market in directory services

- **In print v. online: has the increasing use of online directories (and advertising in online directories) influenced the use of printed directories (and advertising in printed directories)? NMa:**
  - Revenue from advertising in printed directories stable over time
  - High margins on printed directories
  - Pricing of advertising in printed directories independent of use of online directories
- **Online directory search v. online general search. NMa:**
  - General search may differ in use; as choice for advertising may be influenced by use, substitution may be limited for advertisers
- **National geographical market. NMa:**
  - Target group, content, language and distribution

# Flower auctions

- **Bloemenveiling Aalsmeer / FloraHolland**
  - Core service is offering a trading platform
    - Auction bell
    - Intermediation
    - Invoicing and collecting of accounts only
  - Products
    - Cut flowers
    - Houseplants
    - Garden plants
  - Cooperatives looking after interests of members by promoting sale of flowers
  - Related services make up for almost half of revenue
    - Logistic services
    - Financial services
    - Information services
    - Quality control
- **On 21 August 2007 the NMa granted a license**

## Relevant market in flower auctions

- **Distinguishing between trading mechanisms: are alternative trading mechanisms part of the relevant market?**
  - Other flower auctions in the Netherlands or abroad
  - Internet auctions
  - Direct sale in the Netherlands or abroad
  - NMa: larger sellers and buyers, more international trade, more direct sale, increasing role of internet auctions
- **Distinguishing between types of flowers. NMa:**
  - Can be left aside
- **Distinguishing between sellers and buyers. NMa:**
  - Determining relevant product market based on joint analysis of sellers' side and buyers' side of the market
- **Geographic market is at least the EU. NMa:**
  - Sufficient international trade
  - Comparable price levels in the EU

# Two-sidedness in flower auctions

- **Preferences of sellers and buyers**
  - Survey on stated preferences

<b>Ranking of choice criteria for trading mechanisms</b>	
<b>Sellers:</b>	<b>Buyers:</b>
<b>1. Price received for products</b>	<b>1. Quality of products supplied</b>
<b>2. Financial settlement (payment certainty)</b>	<b>2. Price paid for products</b>
<b>3. Costs of trading mechanism</b>	<b>3. Diversity of products supplied</b>
<b>4. Size of demand</b>	<b>4. Size of supply</b>
<b>5. Speed and ease of physical settlement</b>	<b>5. Costs of trading mechanism</b>
<b>6. Predictability price level</b>	<b>6. Speed and ease of physical settlement</b>
<b>7. Costs of related services</b>	<b>7. Predictability of price level</b>

## Two-sidedness in flower auctions

- Can the parties profitably increase their price by 5%?
- Critical loss of 10.1%
- Stated behaviour of sellers and buyers
  - Conservatively estimated actual loss

<b>Suppliers:</b>		<b>Buyers:</b>	
5% increase in costs of trading mechanism	10.8%	5% increase in costs of trading mechanism	13.8%
5% decrease in price received	23.3%	5% increase in price paid	22.7%
5% decrease in demand	23.4%	5% decrease in supply	19.8%
5% increase in costs of related services	17.0%	Length of physical settlement increases by half a day	61.3%
Length of physical settlement increases by half a day	26.1%	Decrease in quality of products supplied	54.7%
No financial settlement (payment certainty)	59.9%	5% decrease in diversity of products supplied	25.2%

## Two-sidedness in flower auctions

- **Partial “model” of cross-side network effects with current market outcome as starting point**

- Sellers’ side:

$$\text{supply} = f(\text{demand}, \text{price}, \text{costs of trading}, \dots)$$

- Buyers’ side:

$$\text{demand} = g(\text{supply}, \text{price}, \text{costs of trading}, \dots)$$

- **“Endogeneity problem”**: **exogenous (explanatory) variable “demand” is dependent on endogenous (dependent) variable “supply” and vice versa**

- Estimated actual losses cannot be used to determine cross-side network effects

## Conclusion

- **Two-sided platforms are characterised by specific economics, mainly as a result of cross-sided network effects**
- **Cross-sided network effects can have a significant impact on the relevant market**
- **Methods to determine the size of cross-sided network effects should be applied carefully**

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