Fakultät für Betriebswirtschaft
Munich School of Management

Markets and Technologies in ICT Industries

Lecture Slides 06

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Agenda

- Introduction
- Technological Background
- ICT Markets
- Business Models of ICT Companies
- **Regulation**
- Final Exam

Market regulation

Introduction

“Sector specific“ Regulation defined

The Regulatory Authority „Bundesnetzagentur“

Many economical activities and business sectors are related to regulatory questions.

Actual regulatory concerns

Telecommunications
- Nationwide availability of broadband access
- Frequency management (Digitale Dividende)
- Unbundling
- Open access and access pricing
- Technology neutrality
- New EU regulatory framweork
- ….

Energy
- Separation of network and production
- Capital cost treatment
- EEG
- Subsidies for e-cars?
- European regulatory position worldwide?
- …

Media
- Youth protection
- …

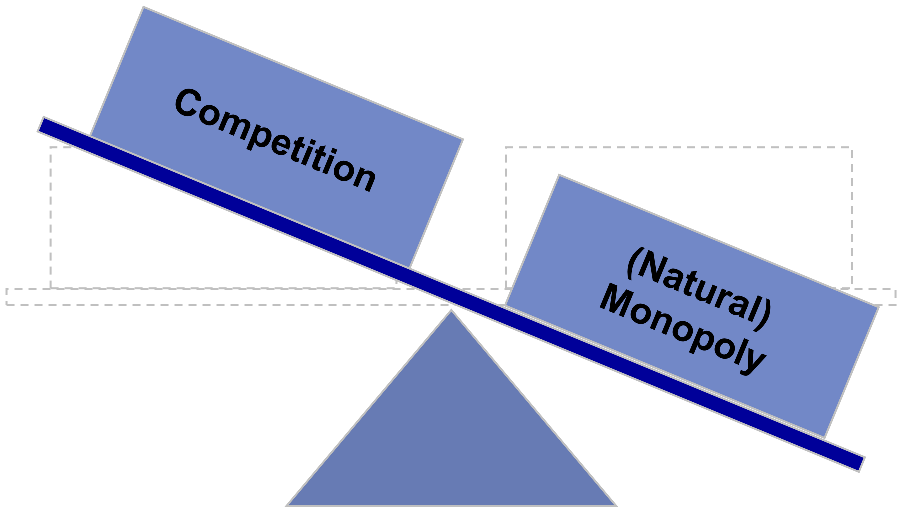
Financial Markets
- Equity rules
- Organization of supervision
- Management bonus limitation
- Landesbanken
- Fair-Value-Evaluation
- Basel II, Solvency…..
- Rating agencies
- Consumer Protection
- Corporate Governance, liability
- ….

Health
- Liberalization of health care industry
- Competition between health insurance companies
- :::

Gasmarkets
- Transit
- Supplier change

Railway
- Competition
- …

Infrastructure based network industries is a major challenge for regulation.



Stability of natural monpolies

- Market participants with (traditional) high market share
- Theory of the stability of natural monopolies (contestable markets):
  Market can be entered by competitors, if
  - Market entrance without costs
  - Market exit without costs

Network Industries

- Network industries (railway, gas, energy, post, water) characterized by
  - High infrastructure investments
  - Low degree of competition
  - Specificity of investments
    (sunk costs – e.g. gas pipeline can be used for other purposes than gas transport at prohibitively high costs only)
  - High barriers for market exit
    (constitution high market entry barriers for new entrants)
  - Investment in infrastructure secures monopoly position and earnings, as potential market entrance is threat by price competition (P = MC)
- Subadditivity and market irreversibility create monopolistic structures

Telecommunications law consist fundamental rules for regulating infrastructure based networks.

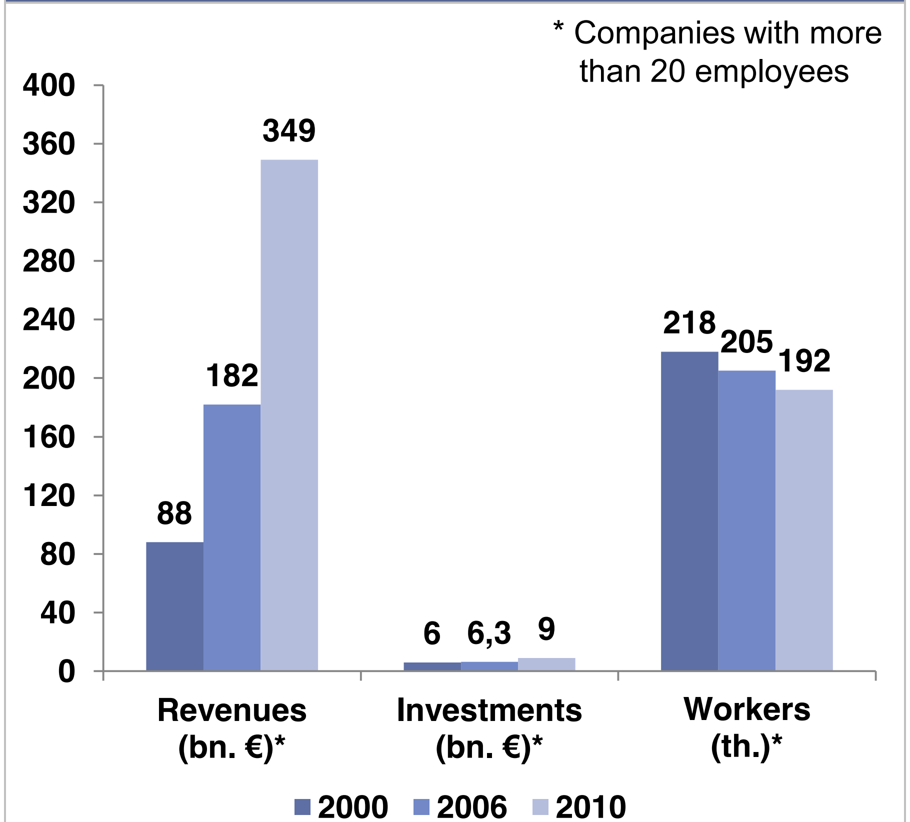
Selected regulatory Instruments

- **Access and Interconnection**
  - Access to networks and components
  - Interconnection of networks (also between competitors)
- **Tarifs Regulation**
  - Access fees
  - Service fees (B2B and B2C market)
  - ex-ante and ex post regulation
- **Unbundling**
  - Resale of DSL connection
  - Line Sharing
  - Unbundled local loop
  - Bitstream Access
- **Non-discriminatory Behavior**
  - Equal treatment of all market participants
  - Transparency
- **Separate Accounting**
  - Separate Accounting for internal and external infrastructure and services

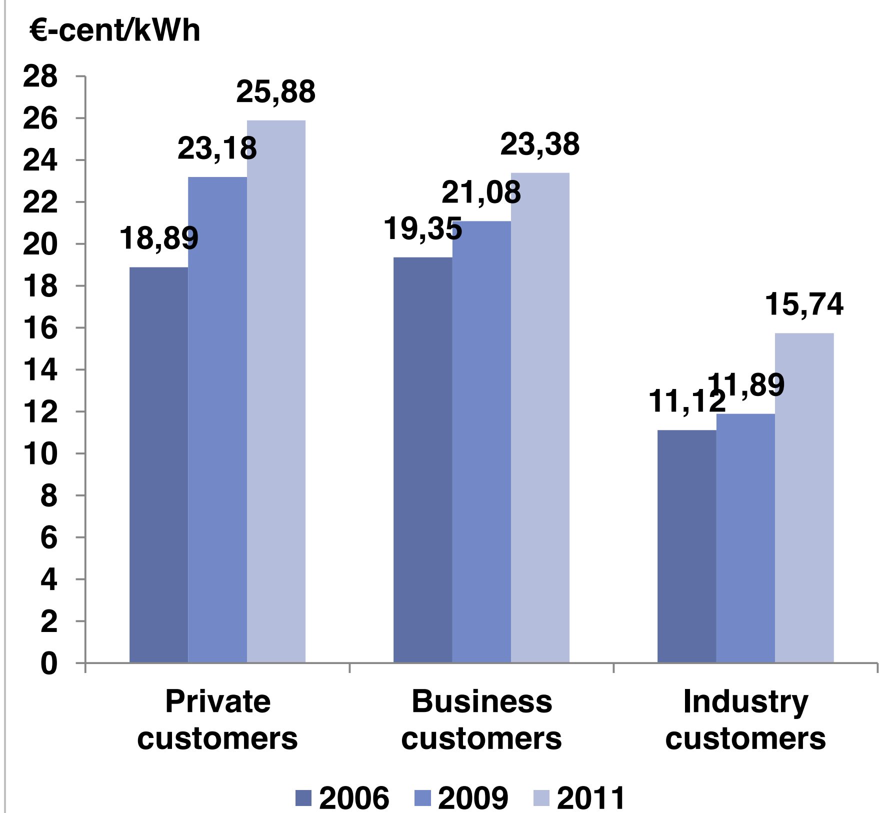
Market size for electric power supply in Germany was 349 bn. € in 2010, prices are increasing from 2006 onwards.

Sector I/V: Electric energy

Electric Energy Market Germany



Price Development

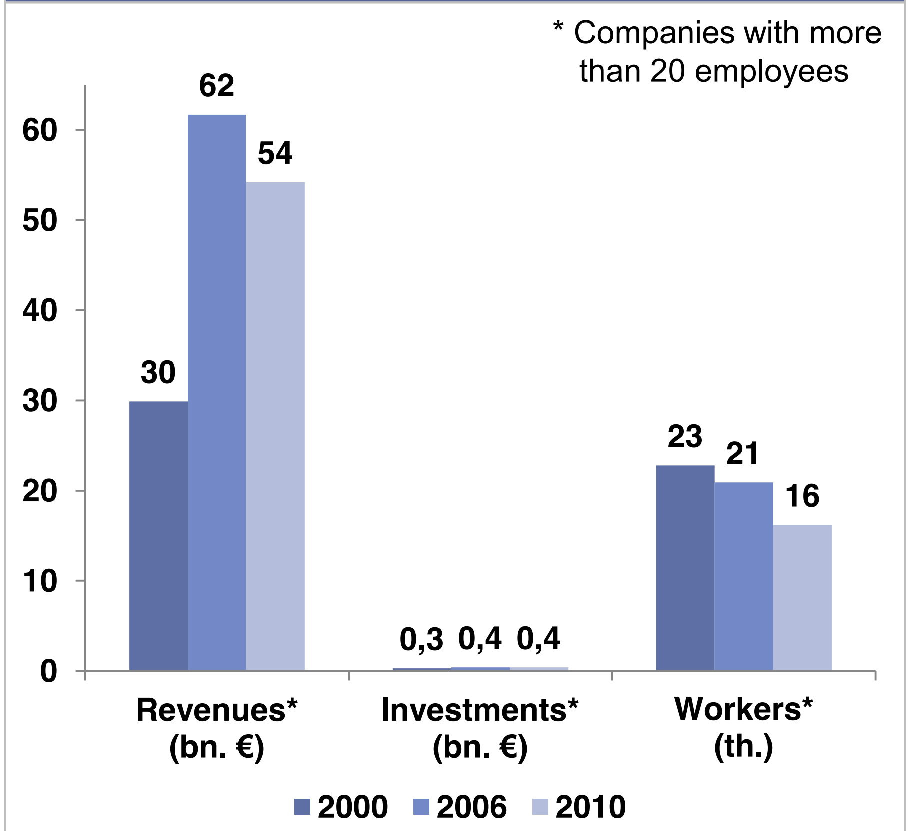


Source: BNetzA (2012); DeStatis (2012)

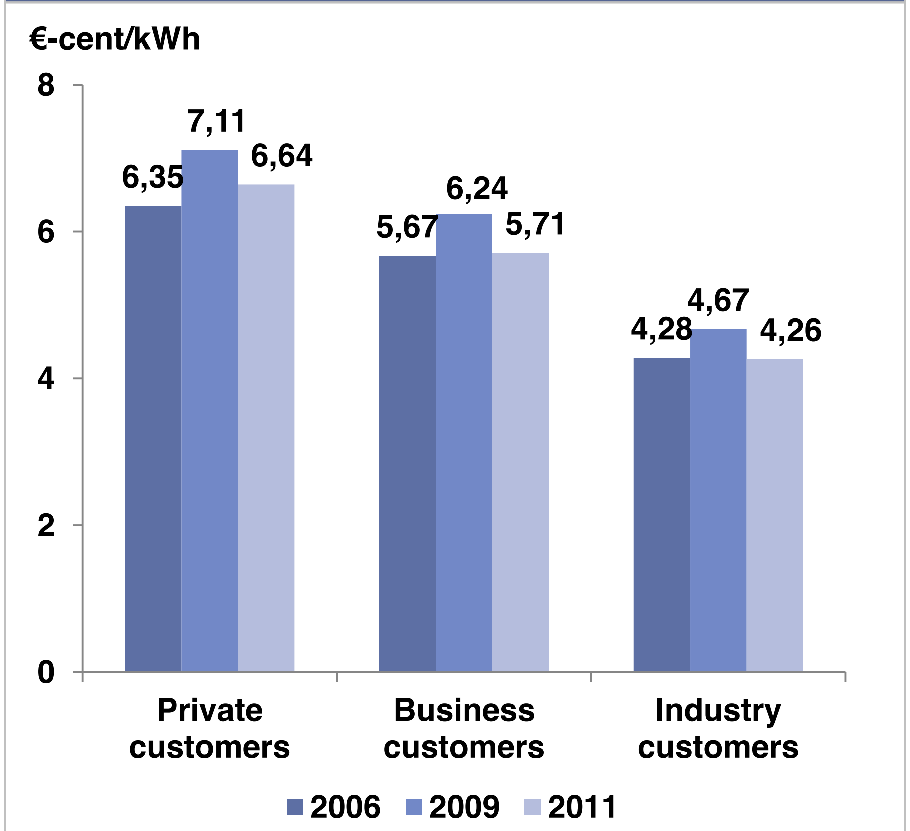
Market size for gas supply was 54 bn. € in 2010, fluctuating price level from 2006 on.

Sector II/V: Gas

Gas Market Germany



Price Development

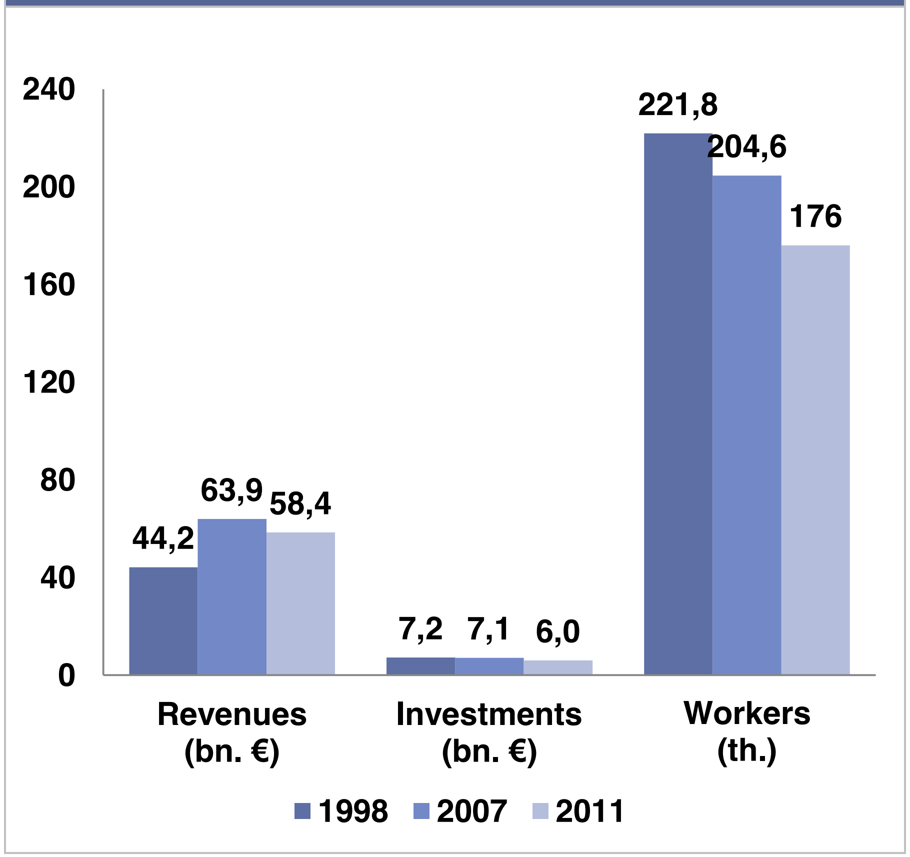


Source: BNetzA (2012); DeStatis (2012)

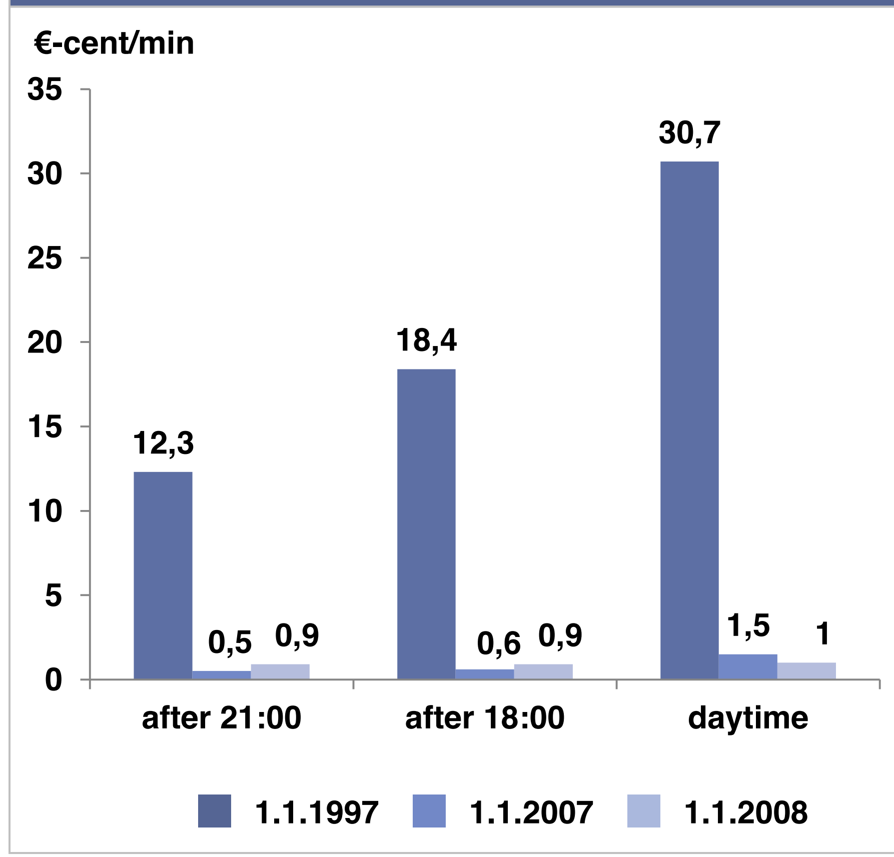
Market size for telecommunication services was 58,5 bn. in 2011. There have been strong decreasing prices from 1997 onwards.

Sector III/V: Telecommunications

Telecommunications Market Size Germany



Price Development

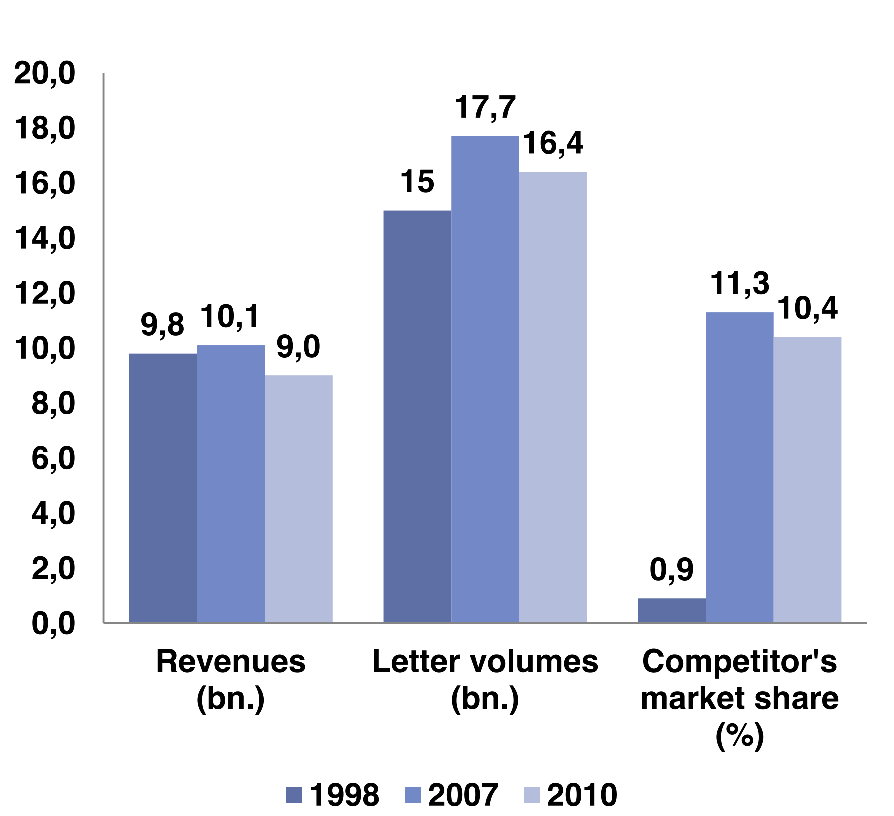


Source: BNetzA (2012); BMWi (2009); DeStatis (2009)

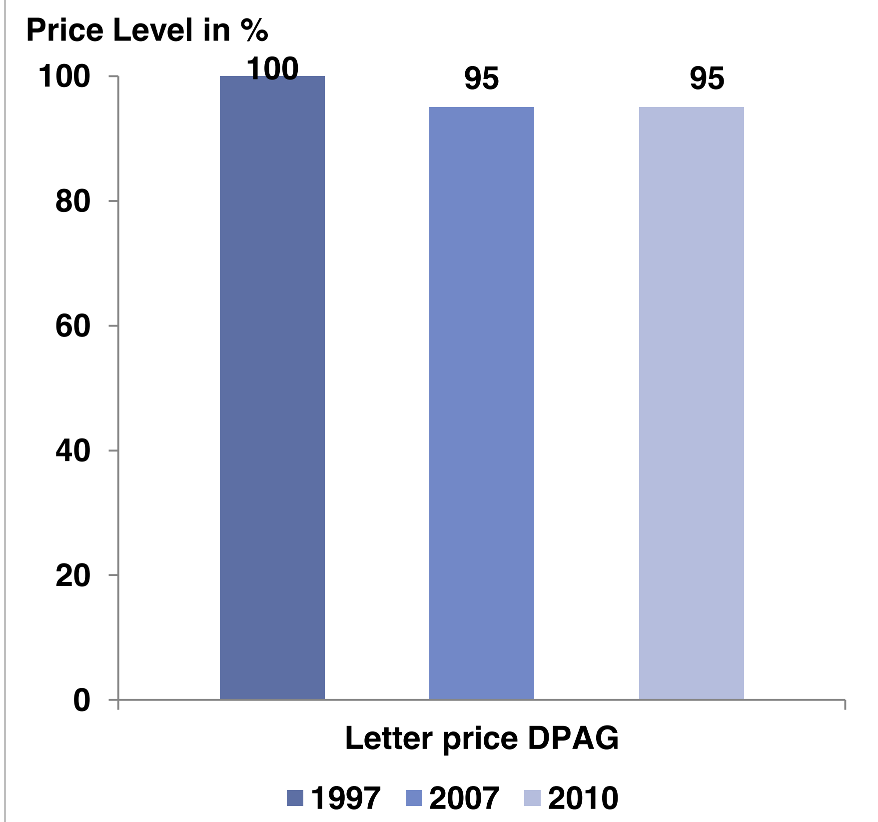
Market size for letter market (< 1.000g) was 9 bn. € in 2010. Prices slightly decreased.

Sector IV/V: Post (Example: Letter market < 1.000 g)

Post Market Size Germany



Price Development

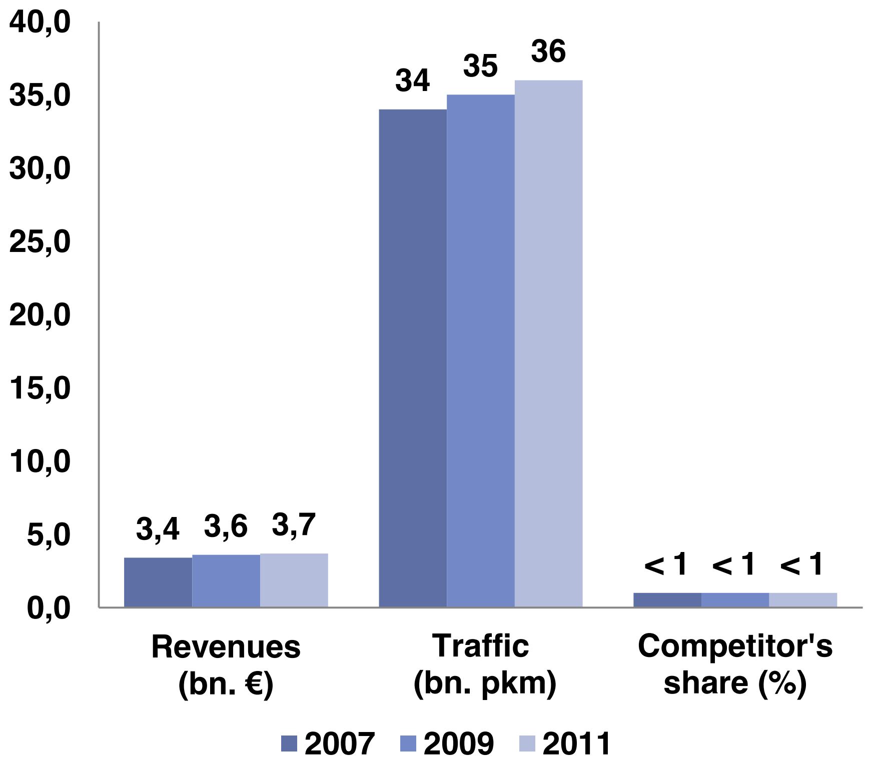


Source: BNetzA (2012); DeStatis (2009)

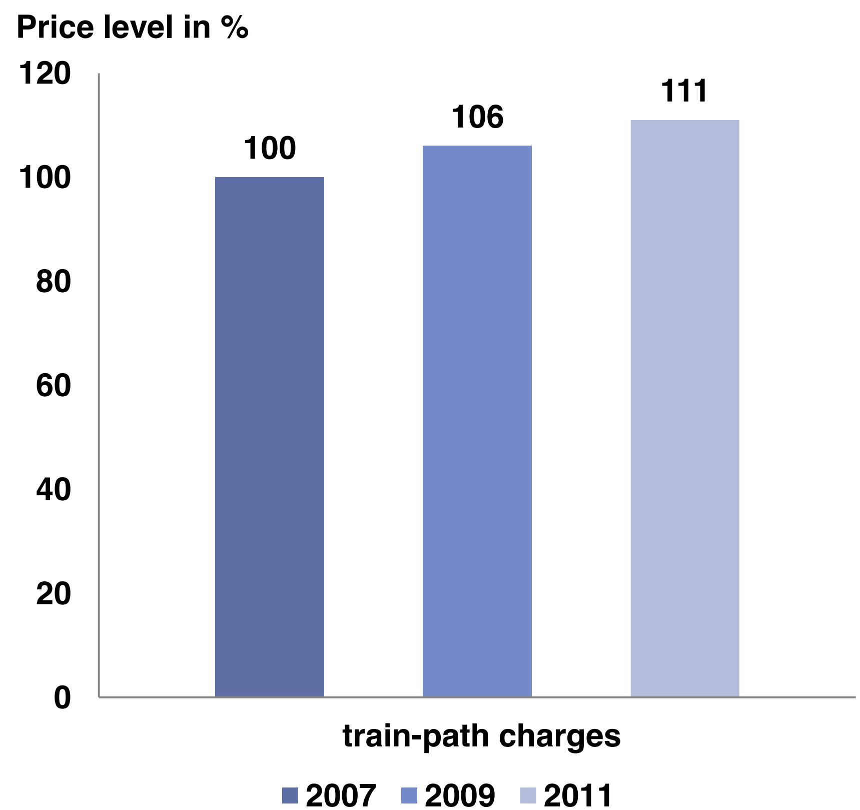
Market size for national mass transport was around 3,7 bn. € in 2011, train-path charges were increasing from 2007.

Sector V/V: Railway (Example: Long distance)

LD-Railroad Market Size Germany



Price Development



Source: BNetzA (2012); DB AG (2011)

Market regulation

Why wand where is regulation required?

Governmental interventions concerning the individual freedom of contract beyond rules that are obligatory for all economic actors (i.e. sector specific intervention)

Two types of regulation can be distinguished

1. Sector-specific regulation regarding public goods in that sector (telecommunications; media; energy…)

2. Regulation aimed at enabling and securing competition
   - Surveillance and control of companies with significant market power
   - Surveillance and control of (natural) monopolies

Regulation Theory

Science

- The appearance of regulation has been dealt with by scholars from various disciplines

- Three approaches have become popular in explaining this phenomenon:

- **Public Interest Theory**
- **Capture Theory**
- **Economic Theory of Regulation**

Source: Kleindorfer/Pedell 2007 Sp. 1564

Public Interest Theory

Normative analysis (when should regulation occur?) is used to produce a positive theory (when does regulation occur?)

- Regulation is supplied in response to the public's demand for the correction of a market failure or for the correction of highly inequitable practices (for example price discrimination; externalities)
- If a market is a natural monopoly, then the public will demand the industry to be regulated because a first-best solution is not achieved in the absence of regulation
- By regulating the industry, net welfare gains result, and this potential for welfare gains generates the public's demand for regulation

Criticism:

- The theory is very incomplete – lacking in this theory is a description of the mechanisms that allows the public to influence legislative action and the behavior of the regulatory agencies that handle regulatory affairs
- A large amount of evidences refutes it (for example price and entry regulation in the trucking and taxi cap industries)

See Viscusi et al (2000), P. 314ff.

Capture Theory

Capture theory states that either regulation is supplied in response to the industry's demand for regulation or the regulatory agency comes to be controlled by the industry over time. In other words regulators are captured by the industry.

- Empirical observations reveal that between the late nineteenth century and the 1960s regulation was not strongly correlated with the existence of market failures
- Instead one empirical regularity is that regulation tends to raise industry profits.

Criticism:

- Although the capture theory is in greater agreement with regulatory history than the public interest theory, it is subject to the same two criticisms mentioned before:
  - A lack in explanation how regulation comes to be "captured" by the industry
  - Inconsistence with some empirical regularities (for example regulations for workers safety or social regulation over the environment)

See Viscusi et al (2000), P. 317f.

Stigler‘s Economic Theory of Regulation

- Stigler put forth a set of assumptions and generated predictions about which industries would be regulated and what form regulation would take as logical implications of these assumptions:
    - The basic resource of the state is the power to coerce
    - Agents are rational in the sense of choosing actions that are utility maximizing

- According to Stigler firms pursue four different goals by influencing the state:
    - Direct subsidy of money
    - Control over entry by new competitors
    - Control over substitutes and complementary products
    - Price fixing

⇒*„regulation is acquired by the industry and is designed and operated primarily for its benefit.“ (Stigler (1971), p. 3)*

See Stigler (1971)

Stigler’s Economic Theory of Regulation

- Stigler’s article “the economic theory of regulation” in 1971 meant a mayor breakthrough in the theory of regulation. Its value was not so much in the contribution that it generated, but in the way it approached the questions**.**

- Based on his insights different formal models were built:
  - *Stigler/Peltzman Model*
  - *Becker Model*

Criticism:

- Although Stigler’s approach was a major breakthrough there is also inconsistence with some empirical results (particularly with actual deregulation efforts)

See Viscusi et al (2000), P. 314ff.

Regulation in the Perspective of the New Institutional Economics- The Transaction Cost Theory

- The principal-agent theory deals with principal-agent relations based on the division of labor, characterized through **asymmetrically distributed information** and through uncertainty about the occurrence of certain environmental situations as well as the contract partner's behavior. Principal-agent relations occur when one party (principal) delegates decisions and implementation competencies to another party (agent), whose decisions have impact not only on his own but also on the principal's welfare.

- **Regulation causes two principal-agent problems:**
  1. Regulated firms as agents of the regulatory authority
     - Regulatory authorities need to gain reliable information about the costs and the demand structures of the monopolist
     - It is difficult for the regulatory authority to evaluate these structures due to the asymmetric distribution of information

     ⇒ The monopolist is thus able to undermine the measures of the regulatory authority

  2. Regulatory authority as the agent of the state/general public
     - Activities of the regulatory authority cannot be observed consistently

     ⇒ Members of the agency can pursue their own goals

See Picot et al (1999), P. 173f.

Regulation in the Perspective of the New Institutional Economics- The Transaction Cost Theory

- The fundamental unit for research in transaction cost theory is the single transaction, defined as the transfer of property rights. The costs of information and communication resulting from initiation, negotiation, settlement, adoption and control of a service exchange are called transaction costs.

- Specific Investments:

  - From a of transaction cost point of view, regulation is an instrument for coordinating specific relationships between firms and their customers
  - Monopolists have to deal with capital intensive investments that make them “vulnerable” (e.g. the construction of a power plant)
  - The regulatory authority guarantees a monopoly of supply
  - Therefore regulation of monopolistic undertakings represents a vertical integration that protects customers against exploitation

  ⇒Transaction cost theory indicates that suppliers can also be in need of protection

See Picot et al (1999), P. 173f.

Regulation can be observed from two different point of views

Two perspectives on regulation can be distinguished:

Advantages of Asymmetric Regulation

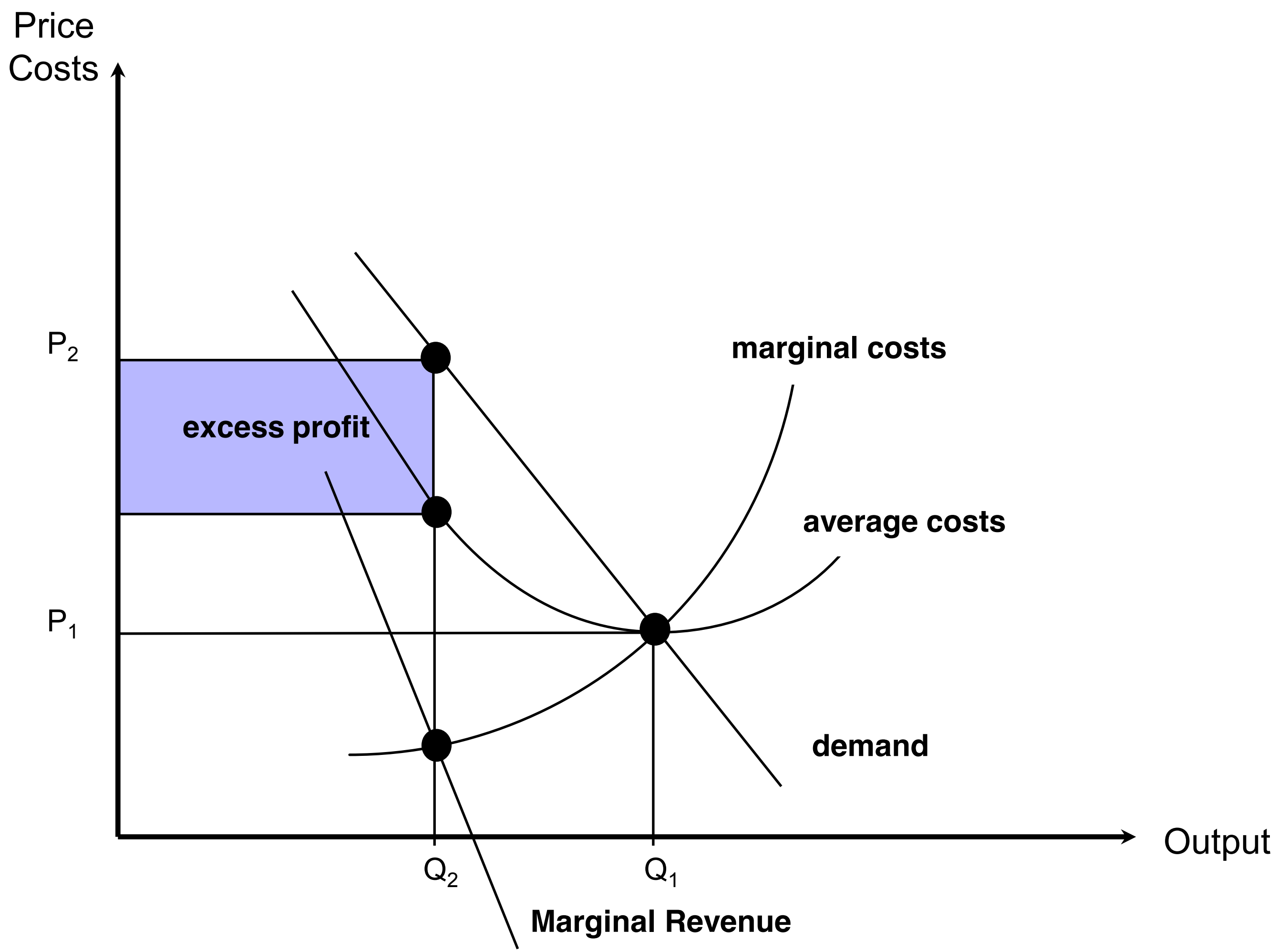
- Symmetric regulation cannot counterbalance the competitive advantages enjoyed by incumbents due to their favorable position assured by the monopolized market structures
- Enabling competition between operators, asymmetric regulation fosters technological progress, especially in the long run.

Disadvantages of Asymmetric Regulation

- Measures in favor of newcomers produce negative consequences in terms of economic efficiency
- Asymmetric regulation favors imitation by companies and thus damages technological innovation
- Asymmetric regulation distorts the evolution of the markets towards free competition and thereby damages the declared aim of the regulation itself as an efficient remedy to the market's failures

- The disadvantages of asymmetric regulation can be controlled if preferential treatment of new competitors is temporally limited
- Experiences in the U.S. and the U.K. have shown that asymmetric regulation can be necessary for a long period

Monopolistic behavior



Quelle: Picot/Dietl/Franck (2008), Shepherd (1990)

Excludability and Diminishability

Diminishability (rivalry) in consumption	Excludability from consumption: high	Excludability from consumption: low
high	***Private goods*** **(e.g. food, cars)**	***Collective or common goods*** (e.g. Road System, natural resources)
low	***Club goods*** *(e.g. private schools, pay TV)*	***Public goods*** *(e.g. national security, public TV)*

Public goods are characterized by non-rivalry and non-exculability in consumption[1)]

1) Vgl. Olson (1965); Musgrave (1969)

Market regulation

The Federal Network Agency – Bundesnetzagentur (BNetzA)

Organization chart

**Bundesnetzagentur
für Elektrizität, Gas, Telekommunikation, Post und Eisenbahnen**

Präsident: Jochen Homann

Vizepräsidenten: Dr. Iris Henseler-Unger, Peter Franke

Abteilung Z	Abteilung IS	Abteilung 1	Abteilung 2	Abteilung3	Abteilung 4	Abteilung 5	Abteilung 6	Abteilung 7
Zentral-abteilung	IT und Sicherheit	Ökonomische Fragen der Regulierung Tele-kommunikation	Rechtsfragen Regulierung Telek., Frequenz-ordnung	Internationales/ Regulierung Post	Technische Regulierung Tele-kommunikation	Außenstellen Rufnummern-missbrauch	Energie-regulierung	Eisenbahn-regulierung

Beschlusskammern

Präsidenten-kammer	Regulierung Telek. Endkunden-märkte	Regulierung Telek. Vorleistungs-märkte	Netzentgelte Strom, Investitions-budgets Strom/Gas, …	Entgelt-regulierung, besondere Missbrauchs-aufsicht	Regulierung Elektrizitäts-netze	Regulierung Gasnetze	Netzentgelte Elektrizität	Netzentgelte Gas
BK. 1	BK. 2	BK. 3	BK. 4	BK. 5	BK. 6	BK. 7	BK. 8	BK. 9

Source: BNetzA (2012)

The European Directives for Electronic Communications

The European Parliament and the Council adopted an update of the regulatory framework consisting of four directives and one decision in 2009

Authorization Directive

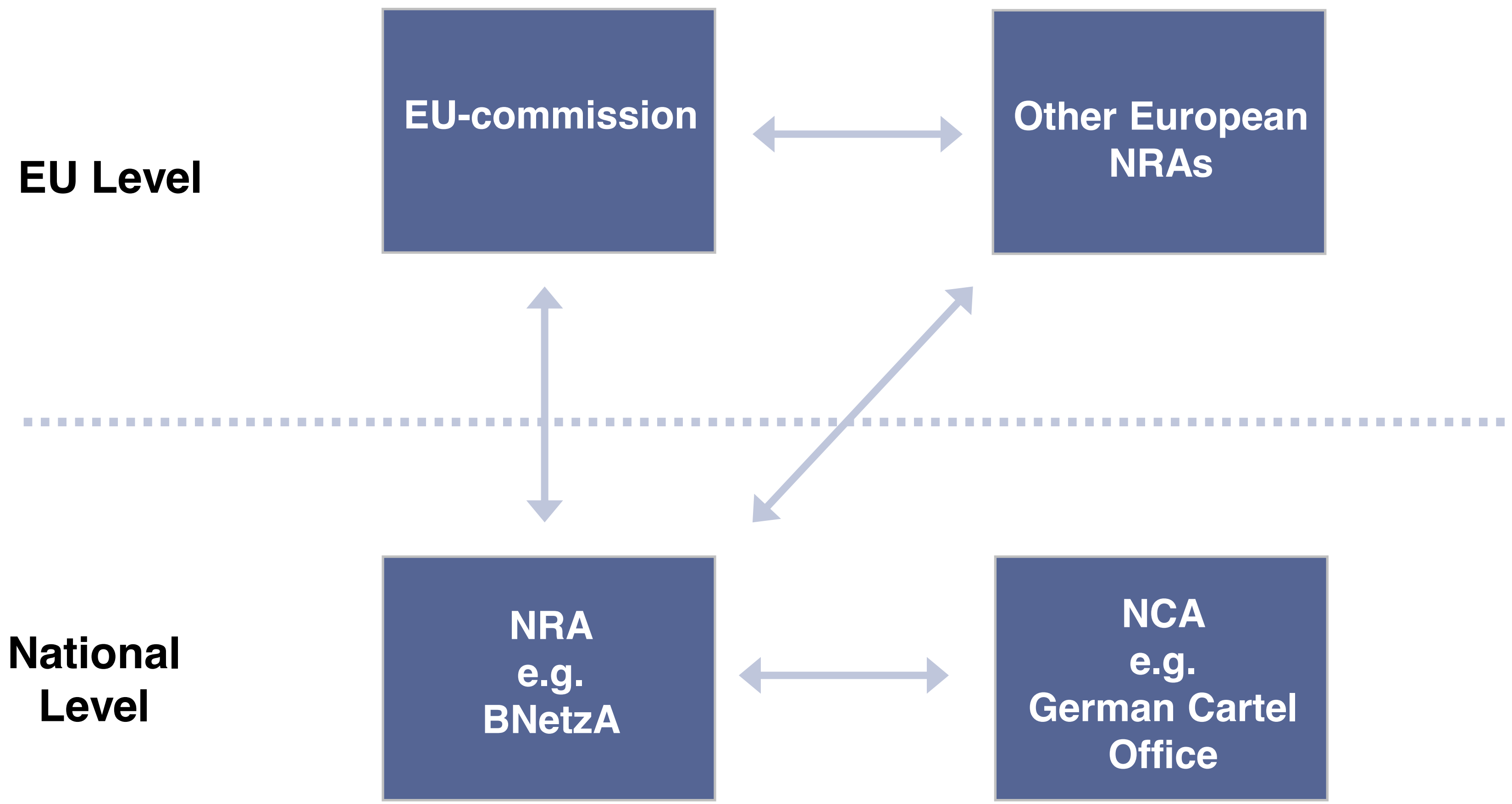
Radio Spectrum Decision

Access Directive

Framework Directive

Universal Service Directive

The regulatory practice in Europe



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Thank You!