Regulation

S-38.041 Networking Business

Regulation – why now?

- Governments decided to liberalize telecom markets in 1990s because of mobile networks, Internet, innovation, internationalization, and need for private capital
- Liberalization implied privatization of government PTTs
- Real competition was possible only with government support for new entrants against incumbents (PTTs)
- In 1990 only 12 countries had independent regulatory agencies, whereas in 2000 the figure was already 96 countries (ref. ITU)
- Telecom regulation has been sector-specific so far but media convergence is bringing together the telecom, broadcasting, and information services regulation

Principles for effective regulation

Objectives

- Promote universal access to basic telecom services
- Foster competitive markets (innovation, quality, efficience)
- In case of monopolies, prevent abuse
- Promote public confidence in telecommunications markets
- Protect consumer rights, including privacy rights
- Promote connectivity through interconnection arrangements
- Optimize use of scarce resources (radio, ids, rights of way)

Principles for effective regulation

How to regulate?

1. Introduce competition
2. Minimize regulatory intervention after competition is established
3. Harmonize with regional and global regulatory standards
4. Regulate by principle
5. Establish operational efficiencies

Principles for effective regulation

How to make regulatory decisions?

1. Transparency
2. Objectivity
3. Professionalism
4. Efficiency
5. Independence

Principles for effective regulation

Competition vs. regulation

- Competition does not always increase social surplus
  - excessive entry ⇒ loss of scale economy
  - cream-skimming entrants ⇒ collapse of incumbents
- Sometimes monopolists maintain efficient prices because of potential competition (theory of *contestable markets*)
- Sometimes monopolists misbehave by
  - using *viable threats* against entrants (e.g. bundling, denial of access)
  - *predatory pricing* (e.g. cross-subsidy ⇒ seems like lower costs)

Principles for effective regulation

Monopoly regulation mechanisms

- Rate of return regulation
  - Operator maximizes profit under the constraint of ”fair rate of return”
  - Increases output but may also inflate costs (*Averch-Johnson effect*)
- Subsidy mechanisms
  - Complete information case (regulator knows demand and cost curves)
    1. Regulator subsidizes the price to achieve the marginal cost level
    2. Operator to pay a lump-sum tax equal to profits at this level
  - Total surplus subsidy mechanism (demand curve known)
    1. Operator sets prices and collects revenue
    2. Regulator pays the operator the consumer surplus (CS) as subsidy
  - Incremental surplus subsidy mechanism
    1. Regulator pays a subsidy equal to incremental change in CS
    2. Operator pays in tax the previous accounting profit

Principles for effective regulation

Monopoly regulation mechanisms: price (i.e. setting *price caps*)

- Regulation with *fixed weights*
  - $\{p : \sum_i p_i q_i(p^0) \leq \sum_i p_i q_i(p^0)\}$, where

    p^0 is reference price vector, p is new price vector, q is quantity
  - how to choose p^0 and to accurately estimate $q_i(p^0)$?
- Regulation with *dynamic price-caps*
  - *Tariff-basket regulation*: $\{p^t : \sum_i p_i^t q_i^{t-1} \leq \sum_i p_i^{t-1} q_i^{t-1}\}$, where t is time
  - Using reference cost: $\{p^t : \sum_i p_i^t q_i^{t-1} \leq c(q^{t-1})\}$, where c is cost
  - Average revenue regulation: $\{p^t : \sum_i p_i^t q_i^{t-1} \leq (1-X)p\sum_i q^{t-1}\}$, where

    X is rate of increasing production efficiency,

    $p\sum_i q^{t-1}$ is the average revenue in period $t-1$
- Regulation with *retail price index* (RPI) where regulator defines service baskets and their average price windows, RPI-X

EU - Regulatory Framework

Adopted 24 July 2003

Framework directive

- Establishes the common regulatory framework
- Defines the tasks of National Regulatory Agencies (NRA)
- Sets procedures for Significant Market Power (SMP) definition
- Accounting separation requirement (network/services)

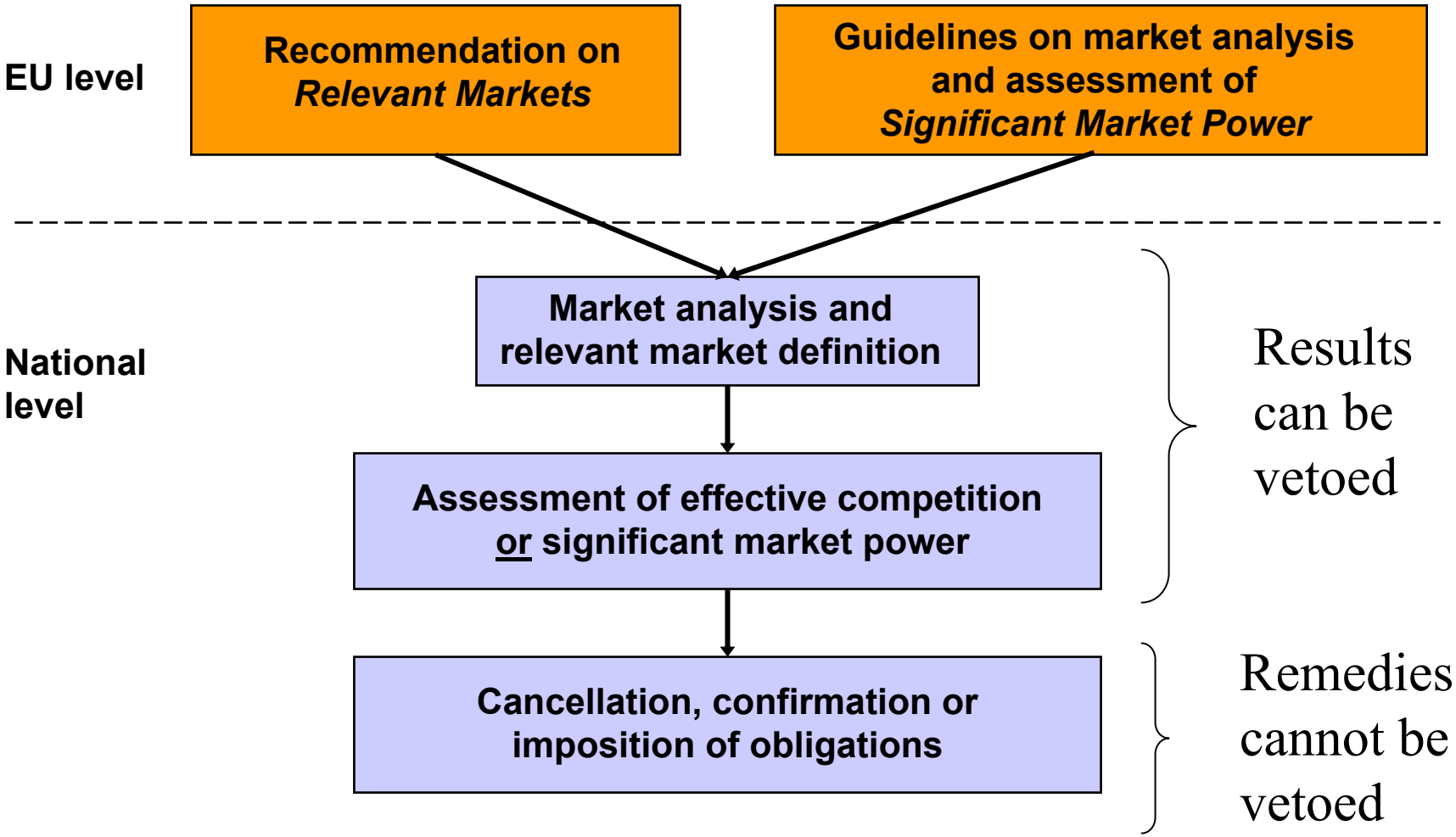
Access directive

- Interconnection and access rights and obligations
- Cost recovery and price control
- Accounting separation, use of specific cost accounting systems

Universal service directive

- Defines minimum set of basic services to all citizens
- Basic telephone service, leased lines

EU – Regulatory process (1/2)



- Important role of NRAs in choosing the appropriate remedy
- Remedy should be effective => solve the lack of competition

EU – Regulatory process (2/2)

1. EU defines the *Relevant Markets*
2. NRAs analyze the *Relevant Markets* on national level
3. Actions

   A) If the national market is not efficiently competitive
   - NRA identify SMP operators
   - NRA impose regulatory obligations

   B) If it is competitive
   - No new obligation can be set
   - And the existing obligations have to be removed

EU – Regulatory process

Definition of *Relevant Markets*

- Commission has defined 7 retail and 11 wholesale markets
- Retail markets (7)
  - Access to PSTN at fixed location (residential/non-residential)
  - Publicly available local/national PSTN (residential/non-residential)
  - Publicly available international PSTN (residential/non-residential)
  - Minimum set of leased lines up to 2Mb/s
- Wholesale markets (11)
  - Call origination/termination in an individual PSTN
  - Transit services in the fixed PSTN
  - Wholesale unbundled access to metallic loops for voice and broadband
  - Wholesale broadband access (”bitstream” access)
  - Wholesale terminating and trunk segments of leased lines
  - Access and call origination in public mobile networks
  - Voice call termination in public mobile networks
  - Wholesale national market for international roaming on public mobile
  - Broadcasting transmission services, to deliver broadcast content to end-users

EU – Regulatory process

Definition of Significant Market Power

1. EU defines the markets
2. NRAs analyze the markets
3. Actions

   A) If not efficiently competive
   - NRA identify SMP operators
   - NRA impose regulatory obligations

   B) If competitive
   - No new obligation can be set
   - And the existing obligations have to be removed

Regulation examples

Case Finland: history (1/2)

1987 Regulation was made independent (separate from PTT)

1990 Data and GSM networks were opened for competition

1997 Telecom Market Act (note: government starts privatization of PTT)

- Bundling of handsets and subscriptions prohibited
- Operators must separate network and service operator businesses

1999 Network operators obligated to sell C&B to service operators

1999 UMTS licences allocated

2000 UMTS operators entitled to national roaming with GSM operators

2001 Subscribers to select their local telephone operator

2002 Communications Market Act I

- Single unit (Ficora) responsible for telecom, broadcasting and Internet
- Broadcasting licences separated to programming and network
- Cable TV operators *must carry* the public digital YLE broadcasting
- Regulator (Ficora) gets the responsibility of information security (CERT-FI, Computer Emergency Response Team - Finland)

Regulation examples

Case Finland: history (2/2)

2003 Communications Market Act II
- Deployment of the EU Communications Market Act (as basic laws)
- Broadcast operators equal to telecom operators (due to convergence)
- Digital content services still remain out of scope
- Mobile number portability made obligatory

2003 Rules for allocation of national domain names (.fi)

2003 VoIP calls to PSTN subject to PSTN regulation

2004 Mobile Network Operators defined as SMPs $\Rightarrow$ *cost-oriented pricing* and cost reporting enforced on all interconnection traffic

2004 Child protection against harmful TV broadcasting

2004 Fixed telephony number portability (homes now, enterprises later on)

Regulation examples

Case Finland: speculation on future (1/2)

- Wholesale price cap for broadband Internet access ? (see example)
- Mobile operators to charge the same wholesale call termination fee from fixed and mobile operators (now c. 18c vs. 11c per min, respectively) ?
- Allowance of cross-subsidy between mobile handset and subscription ?
- Penalty for generation of spam traffic ?
- Longer memory for authorized monitoring of person-to-person traffic ?
- ENUM interoperability for VoIP between GSM and Internet ?
- Portability of operator-independent domain names (.fi) ?
- National roaming for WLAN hotspots ?
- Email interconnection between GPRS and fixed ?
- Peer-to-peer connectivity between mobile handsets ?

Regulation examples

Case Finland: speculation on future (2/2)

- Role of mobile virtual network operators (MVNOs): enabling an MVNO to use several MNOs in parallel ?
- Open SIM-cards to facilitate parallel mobile value chains (more ids in one SIM-card) ?
- Role of independent content operators: enabling flexible delivery of digital content through all channels ?

Regulation examples

Case Finland: Broadband Internet access 2004

- Finland is lagging behind in broadband penetration
  - Low population density ⇒ long ”last mile” ⇒ high marginal cost
  - Local copper monopolies ⇒ poor competition ⇒ extra margins
  - Copper rental wholesale prices 15% above consumer price
- Threat of Internet telephony may also slow down incumbents
- EU proposed to subsidize rural area connections
- Government target of 1M homes by 2005 looks unlikely
- Regulator tools for reducing the broadband switching cost
  - Enforce fast set-up of rental access connections
  - Favor new alternative access technology, e.g. broadband wireless
  - Set wholesale price caps (proposal being negotiated)
  - Move ownership of “last mile” to subscribers by law
  - Clarify the rules of Internet telephony deployment

Regulation examples

Case Finland: 3G network adoption 2004

- Original licence conditions (beauty contest in year 2000)
  - four licences awarded, one for a new entrant
  - no hard deadlines for large radio coverage
- Slow roll-out $\Rightarrow$ regulator to speed up adoption
  - licence holders will be allowed to rent radio capacity from each other (min own coverage 35% of population, i.e. main cities)
  - handset subsidies potentially allowed
  - government subsidies/encouragement to mobile content ?