3G case studies overview

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Issues

- **Licensing strategies**
  - ⇨ **Auction, beauty contest, mixed**
- **Licensing conditions**
  - ⇨ **Competition, ownership, coverage, sharing, standards, timing, etc.**
- **Spectrum allocation**
- **Transition to 3G**
- **Market prospects**

Licensing strategies

- **Auction**
  - ⇨ **Venezuela, Chile?**
- **Beauty contest**
  - ⇨ **Japan, Sweden, China?**
- **Mixed**
  - ⇨ **Hong Kong SAR**

Auction and mixed

- **Hong Kong**
  - ⇨ **Pre-qualification process**
  - ⇨ **Royalty-based mechanism: licensee pays a percentage of 3G revenues over time**
  - ⇨ **First 5 years they pay a fixed minimum**
- **Venezuela**
  - ⇨ **Demanded by legislation**
  - ⇨ **Auction revenues for Internet development**
- **Chile**
  - ⇨ **Undecided. Requires changes in law**

Auction implications

- **Governments: revenues**
- **Incumbents: no choice**
- **New entrants: an opportunity**
- **Other operators: high risk**
- **Users: might bring higher prices**
- **Society: efficient allocation of resources**

Beauty contest

- **Sweden**
  - ⇨ **Telecom Bill – auction not to be used when licensing spectrum**
  - ⇨ **Licensing to be based on "*grounds of fact*"**
  - ⇨ **Pre-qualification and beauty contest**
  - ⇨ **Pace of roll out and geographic coverage**
  - ⇨ **A leader in hardware and service development**
- **China**
  - ⇨ **Operators to pay for spectrumn [benchmarked]**

Beauty contest implications

- **Subjective, unreliable, non-measurable, inefficient allocation of resources**

  ⇨ **Sweden [paper]**

- **Transparent, measurable, fast, cheap, quick net and service roll out, no damage on operator's investment capabilities, auction or lottery considered non-objective criteria**

  ⇨ **Sweden [case study]**

Licensing conditions / requirements

- **Competition**
  - ⇨ **A license for a new entrant (?)**
- **Ownership**
  - ⇨ **No cross ownership**
- **MVNOs**
  - ⇨ **Enforced or market driven**
- **Market / geographic coverage**
- **Cost sharing**
- **Standards**
- **Timing**

Expanding competition

- **3G licensing seen as an opportunity to expand effective competition**
- **Likelihood according to market structure and current conditions**
  - ⇨ **Venezuela = likely**
  - ⇨ **Chile = unlikely**
  - ⇨ **Japan = through open network access (?)**
  - ⇨ **Sweden = likely**
  - ⇨ **HK = through open network access (?)**

Reserving for new entrants

- **Sweden**
  - ⇨ **No reservation, yet entry of 2 new operators**
- **Japan**
  - ⇨ **No reservation, no new entrants. Three local incumbents. No foreign carriers [vodaphone]**
- **Venezuela**
  - ⇨ **Four licenses, one reserved for a new entrant**
- **Chile**
  - ⇨ **Four licenses, reservation not decided**

Controlling ownership

- **Sweden**
  - ⇨ **Control of more than 20% of shares in any of the other applying operators/consortiums**
- **No such requirement on**
  - ⇨ **Japan**
  - ⇨ **Hong Kong**
  - ⇨ **Venezuela and Chile**

Enforcing VMNOs?

- **Hong Kong**
  - ⇨ **Up to 30% of network capacity should be opened for VMNOs**
  - ⇨ **Operators asked for 20% to avoid competitor's access to more than 100% capacity due to aggregation**
  - ⇨ **Wholesale prices for VMNOs by commercial negotiations, but subjet to NRA intervention**
- **Sweden: allowed – 30 in Feb 2001**
- **Chile and Venezuela**
  - ⇨ **Left to commercial negotiations**

Licensees

- ⇨ **Japan (3)**
- ⇨ **Sweden (4)**
- ⇨ **Hong Kong (4)**
- ⇨ **Venezuela (4)**
- ⇨ **Chile (4)**
- ⇨ **China (?)**
- ⇨ **Ghana (?)**

Coverage

- **Japan**
  - ⇨ **50% of population in the first five years [DoCoMo to cover 97% of pop. by March 2004]**
- **Sweden**
  - ⇨ **30% of population by each carrier – remaining 70% can be covered through roaming agreements with other operators**
- **Hong Kong**
  - ⇨ **Set by regulator, linked to performance bonds backed by bank guarranty**

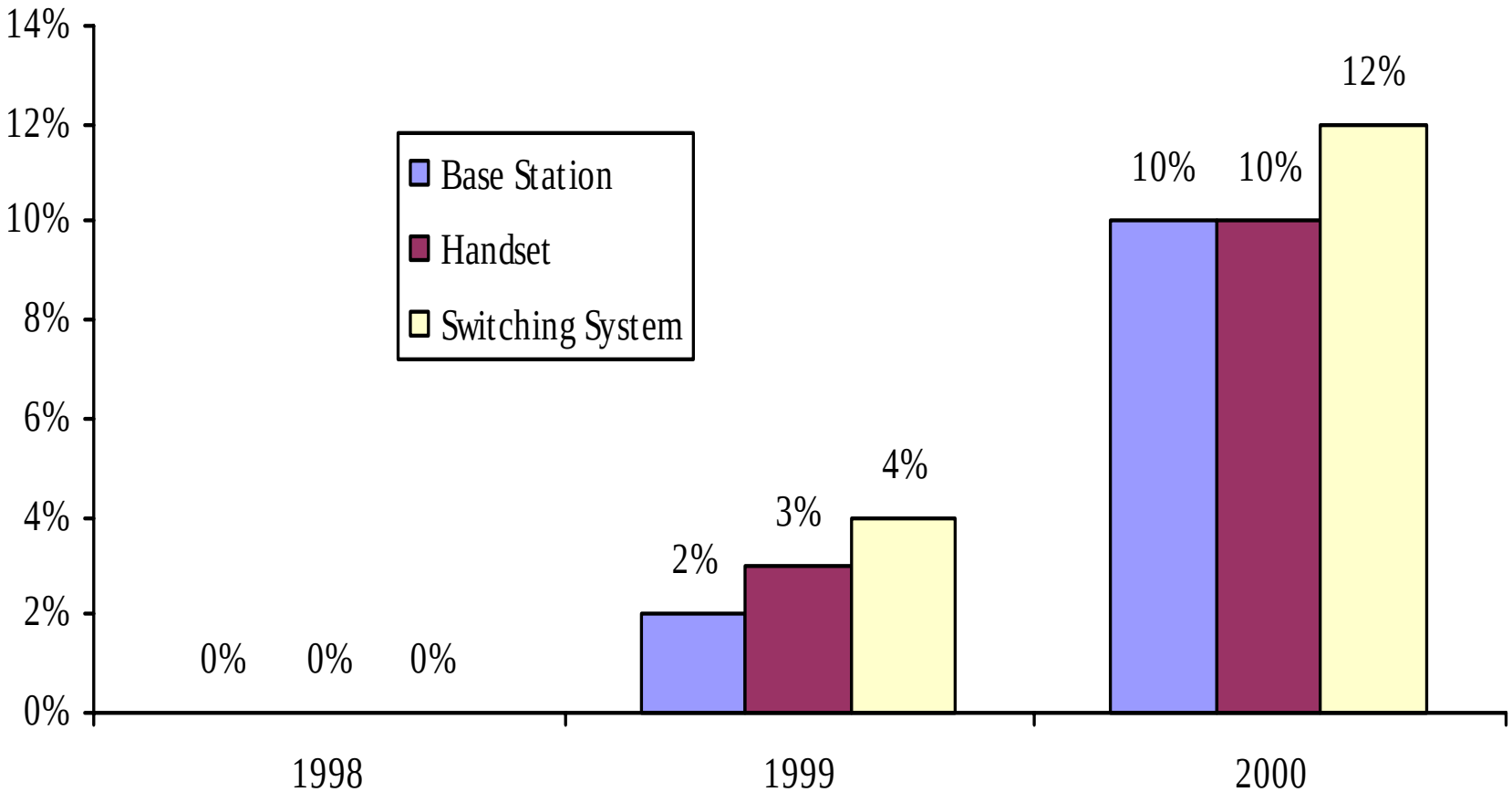
Cost sharing

- **Sweden**
  - ⇨ **Yes to increase pace and reduce cost of rollout**
  - ⇨ **Carriers will have to reach agreements [infrastructure roaming]**
  - ⇨ **Alliances in the months following the licensing**
- **Collusion: threat to effective competition**
  - ⇨ **An issue for the telecom regulator?**

Standards

- **China: an industrial 3G strategy and its global integration dilemma**
  - Huawei – 97 patents – CDMA
  - ZTE (cdma2000) and Datang (TD-SCDMA) – gov support
- **Hong Kong: any standard if compatible among each other and with backward compatibility existing 2G systems**
- **Europe: ETSI's 3G handset standards recommendations**
- **Japan: WCDMA and cdma2000**
- **Chile, Venezuela and Ghana (?): a commercial decision of the operators – but affected by spectrum allocated to 3G**

Market share evolution of Chinese domestic vendors



Source: Ministry of Information Industry, China

Timing of licensing

- ⇨ **Japan (done)**
- ⇨ **Sweden (done)**
- ⇨ **Hong Kong (Q4 01)**
- ⇨ **Venezuela (Q1 02)**
- ⇨ **Chile (Q2 02)**
- ⇨ **China (???)**
- ⇨ **Ghana (?)**

Spectrum allocation

- **Chile**
  - ⇨ **Core IMT 2000 bands occupied by PCS**
  - ⇨ **Then 1710-1850Mhz up & 2110-2170Mhz**
  - ⇨ **Waiting for regional trends and USA**
- **Venezuela**
  - ⇨ **Core IMT2000 bands vacant**
  - ⇨ **No contraints on timing due to spectrum allocation**
- **For small markets spectrum allocation is related to economies of scale**
  - ⇨ **potential bidders**
  - ⇨ **availability and cost of hardware**
  - ⇨ **services, applications, and content**

Transition to 3G

- **China**
  - ⇨ **WAP 2% of mobile subscribers – per minute charge**
  - ⇨ **Monternet great success – move to packet switching – January 2001 GPRS**
  - ⇨ **SMS: 56 m/M in Q1 00 to 192 m/M in Q4 00**
- **Venezuela and Chile**
  - ⇨ **Gov. & operators**
  - ⇨ **Demand for mobile [voice vs. data] – different in each country**
- **Japan**
  - ⇨ **I-mode then 3G**

Business case for 3G

- **High income economies**
  - ⇨ **Japan, Sweden, HK: a natural transition demand driven**
- **Profitability**
  - ⇨ **Took 10 years for GSM in Sweden to become profitable**
- **Developing countries**
  - ⇨ **Ghana, Chile, Venezuela, China: not so clear [individual users of broadband mobile services]. Supply playing an important role**

Charging for services

- **Charging schemes**
  - ⇨ **Per minute, per packet, per service, flate rate, per access time**
- **Emerging approaches**
  - ⇨ **Japan: per packet**
  - ⇨ **Sweden: range of pricing arrangements**
- **WAP**
  - ⇨ **Poor performance because it is charged by time and it is expensive**
- **Always on – packet switched**
  - ⇨ **Lower rates, but charges by packet not transparent, difficult to monitor by user**

Cost of terminals

- **Cost of terminals**
  - ⇨ **Sweden: US$ 400 sales price**
  - ⇨ **Availability? The vicious cycle.**
  - ⇨ **Equipment supplier financing**
- **Subsidizing terminals**
  - ⇨ **Some operators in Sweden have decided that they will not subsidize 3G terminals**
  - ⇨ **The Chilean experience**

Summary

- **Chile**
  - ⇨ **Spectrum dilemma**
- **China**
  - ⇨ **Standards – industrial policy**
- **Ghana**
  - ⇨ **Market size and purchasing power**
- **Japan**
  - ⇨ **Services and prices**
- **Sweden**
  - ⇨ **Market structure and service strategies**
- **Venezuela**
  - ⇨ **Timing and design of license**

THANK YOU!