

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 subject 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**

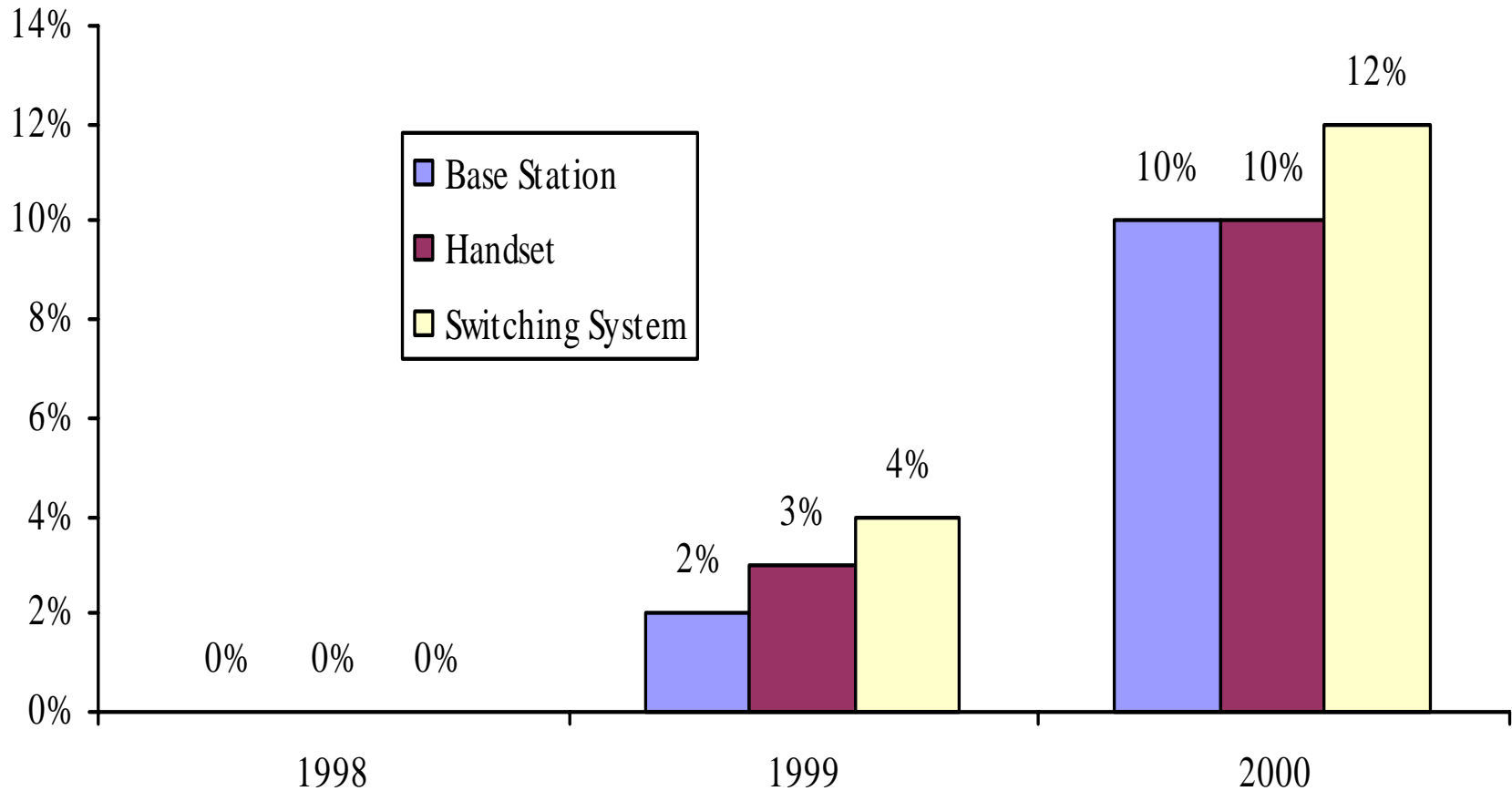
- ⇒ **An issue for the telecom regulator?**



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 constraints 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!