New Trends in Wholesale Broadband Access Regulation

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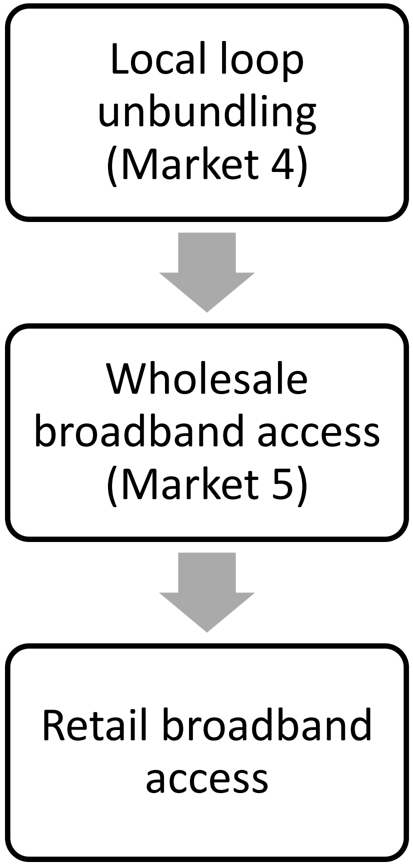
Outline

- Cable broadband
- Geographic markets / remedies
- Residential & business users
- Pricing regulation
- Mobile broadband
- NGA

Broadband Value Chain



- Market analysis starts by looking at the downstream retail market
- Regulation in Market 5 will depend on:
  - Degree of competition in downstream retail market
  - Effectiveness of regulation in upstream Market 4

The Three Steps in Market Analysis

1. Market definition

2. SMP assessment

3. Regulatory remedies

- NRAs (and the EC) do not always agree at which stage certain factors should be taken into consideration

- Cable broadband is classic example

Cable Broadband

- NRAs have taken different views on inclusion of Cable BB in Market 5
- But only two have proposed to require cable operators to provide WBA
  - Malta changed its mind after EC pressure
  - Denmark made a proposal, but still no final decision after 12 months... ?

Is Cable BB included in Market 5?

No		Yes	
No significant cable presence in country	Demand- and supply-side substitutability with ADSL in retail market, but not in wholesale market	Demand- and supply-side substitutability with ADSL in retail market (indirect pricing constraint)	Demand- and supply-side substitutability in both retail and wholesale markets
Italy	Belgium Czech Republic Hungary Slovenia Spain Sweden	Austria France Germany Netherlands Portugal UK	Denmark Malta Poland

When Cable BB is included in M5, are cable operators regulated?

No	Yes
Austria France Germany Malta (M5 is competitive) Netherlands Poland Portugal UK	Denmark (proposal)

Denmark

- Incumbent Telco TDC is also the largest cable operator
- WBA obligation to cover TDC's copper and cable networks
- If not, concern that in areas where TDC has both networks, incentive to only make NGA investments in cable network to avoid access obligation
- WBA to include multicasting
- Few details. NRA's final decision not yet adopted

Geographic Markets / Remedies

- Not to be confused with geographic markets in Finland & Hungary because of regional incumbents
- Portugal & UK have defined geographic sub-markets based on degree of competition from cable and LLUOs
- Lead to deregulation of WBA in very large part of each country (69% and 61%)
- Austria & Spain proposed geographic variation of remedies in a single national market, both failed
- But in all four cases
  - Geographic differentiation based on MDF / local exchange areas
  - The presence of 3 or 4 operators was the critical factor

3 or 4 Operators = Competition?

UK 4	Portugal 3	Austria 3	Spain 4
• 4+ operators present (incl. BT and Virgin); or • 4+ operators forecast where LE serves >10K premises • **69% UK premises**	• 1+ LLUO and cable (in addition to Portugal Telecom); and • Cable penetration >60% households • **61% of total retail BB lines**	• LEs which cover >2500 households; and where • 3+ operators offer retail BB access (incl. Telekom Austria); and • TA's local share <50% • **55% of total retail BB lines**	• MDFs serving >10K lines; and where • 3+ LLUOs and Telefonica's market share <50%; or • 2+ LLUOs and cable coverage >60% • **37% of total retail BB lines**

Geographic Markets / Remedies in the Future?

- Geographic variations in competition may change leading to single, national markets / remedies
  - NGA deployment and closure of MDFs will take place firstly in densely populated areas that were most attractive to LLU
  - Mobile BB available nationwide (one of reasons why Austrian NRA changed its mind)

Residential & Business Users

- Netherlands has defined separate retail and wholesale markets for residential and business users
  - Based on contention ratios
  - Residential (above 1:20): DSL, cable, fibre
  - Business (1:1 to 1:20): DSL and fibre
- Less regulation of WBA products for residential users
- Austria looks to be heading in similar direction...

	"Low quality" WBA	"High quality" WBA
Copper / DSL	Yes	Yes
Fibre	No (fibre unbundling sufficient)	Yes
Cost orientation	No	Yes

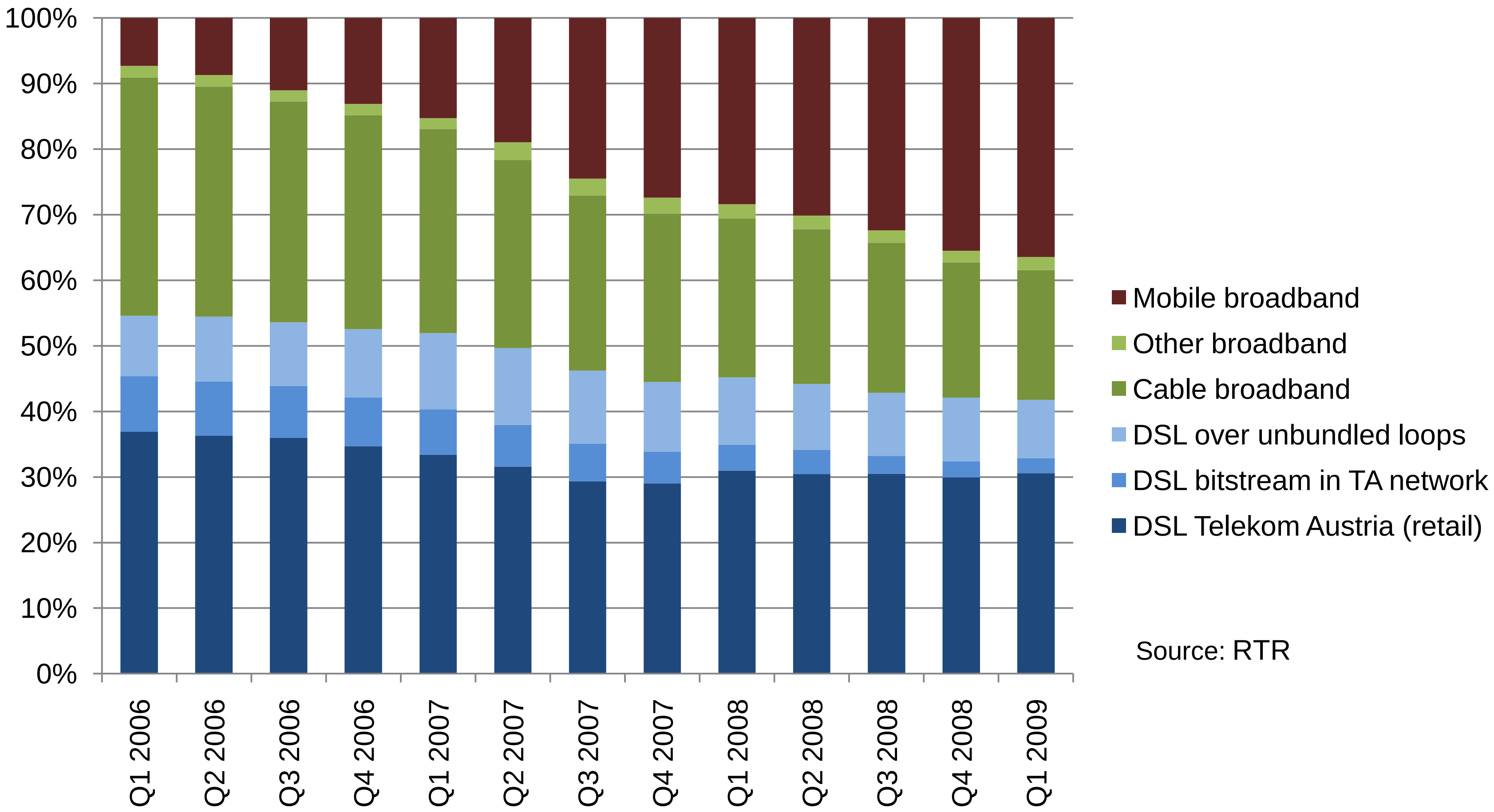
Pricing Regulation in M5?

Cost orientation	Retail minus	Only non-discrimination obligation
Austria Belgium Denmark France Germany Italy Netherlands ("High quality" WBA on copper and fibre) Poland Portugal (naked DSL) Spain Sweden	Hungary Portugal Slovenia	Czech Republic Finland Netherlands ("Low quality" WBA on copper. Not fibre) Norway UK (but BT voluntary pricing commitments)

Mobile Broadband

- Austria is the first country to propose that Mobile (3G) BB is a substitute to ADSL- and cable-based BB in the retail market for residential users
- Mobile BB accounts for 1/3 of retail market in Austria
- Impact on M5 analysis:
  - Definition of separate retail BB markets for residential users (which is competitive) and business users
  - Wholesale market definition includes only BB for business users
- Only market definition notified so far. SMP and remedies later

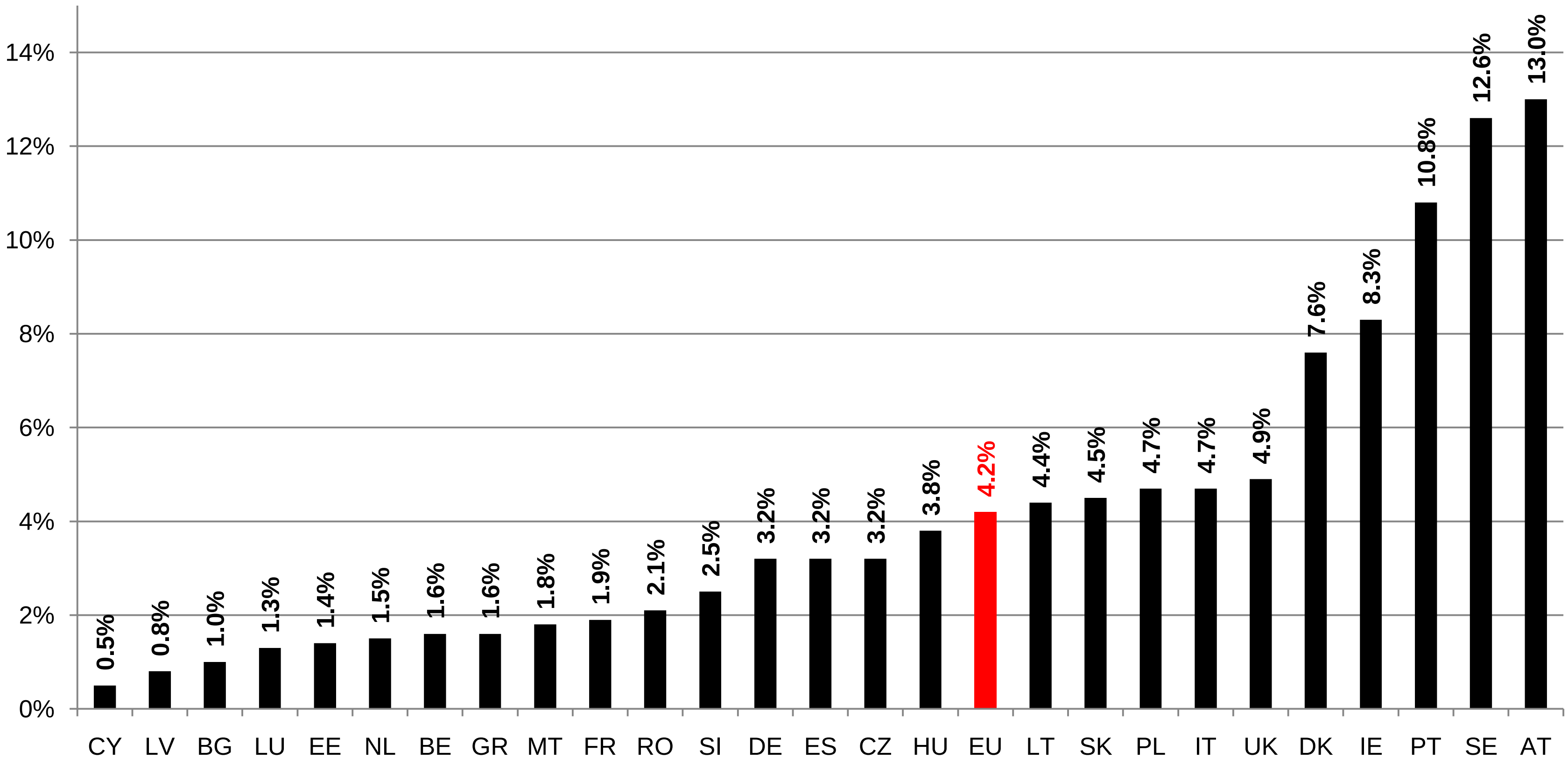
Retail BB Market in Austria



Source: RTR

Mobile BB Penetration in the EU

Dedicated data service cards/modems per 100 population - July 2009



Source: COCOM09-29

Is Mobile BB included in Market 5?

No			Yes	
Too early (low 3G take-up)	No demand- and supply-side substitutability with ADSL in retail market (3G and ADSL are complements, not substitutes)	Demand- and supply-side substitutability with ADSL in retail market, but not in wholesale market	Demand- and supply-side substitutability in retail market	Demand- and supply-side substitutability in both retail and wholesale markets
Belgium Germany Poland	Hungary Italy Netherlands Portugal Spain UK	Czech Republic France Denmark Slovenia Sweden	Austria (proposal)	

Mobile BB in M5 in the Future?

- Against (EC’s argument)
  - Significantly higher bandwidths will become available on fixed networks as NGAs are deployed
  - Mobile BB will not be a substitute, even with 4G/LTE?
- For
  - For a significant number of residential users mobile BB will be a substitute for fixed BB

Next Generation Access

- Still too early to say much
- NRAs have different views on NGA & M5 depending on:
  - Timing when latest analysis of M5 was done
  - NGA model planned by incumbent Telco and speed of deployment
  - Viability of “passive” access remedies in M4 (ducts)

Is NGA included in Market 5?

No			Yes	
Too early	No demand- and supply-side substitutability with ADSL in retail market	Demand- and supply-side substitutability with ADSL in retail market, but not in wholesale market	Demand- and supply-side substitutability in retail market (chain substitution)	Demand- and supply-side substitutability in both retail and wholesale markets
Austria Czech Republic Hungary Poland UK			France Italy Portugal Spain	Belgium Denmark Germany (proposal) Netherlands Slovenia Sweden

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When NGA has been included in M5, is WBA over NGA regulated?

	Too early to regulate NGA	Preference for passive remedies (ducts) in M4 and sharing in-building wiring	Same remedies apply to WBA over ADSL and NGA	Different remedies apply to NGA
No published NGA plans by incumbent			Sweden	
FTTC+VDSL2	Denmark		Belgium Germany (proposal)	
FTTH	Portugal	France	Spain (but only up to 30 Mbps)	Slovenia
Mix of both		Netherlands (“Low quality”)	Netherlands (“High quality”)	

EC (draft) NGA Recommendation

- Aim to provide guidance to NRAs on remedies to impose on SMP operators in M4 & M5
- Significant change between first and second drafts
  - Priority for duct access
  - Full set of remedies as default. No cost orientation / No SMP only in restricted cases linked to Multi-fibre FTTH.
- Undergoing another re-write. Final adoption expected in March/April 2010
- EC Recommendations are not binding