LLU and its Role in Broadband Development

Dr. V. Sridhar

Research Fellow

Sasken Communication Technologies

Bangalore

Sridhar.varadharajan@sasken.com

Why LLU?

- Erstwhile monopoly operators have 85% of the 37 million wireline subscribers in the country
  - Also have about 85% (about 5.5 M) of the 7.4 million broadband subscribers serviced by their wireline service
- All these broadband subscribers access using DSL through the local loop
  - About 18% of the incumbents lines are broadband enabled
  - Leaving about 25 M lines not yet being used for broadband service
- Since DSL through the local loop is still the major mode of delivering broadband service by the incumbents, it is of interest to debate about non-discriminatory LLU

Which form of LLU?

- Full unbundling, line sharing or bit stream access
  - TRAI recommended line sharing and bit stream access for lines that are 5 years or more older in Nov 2005
- Line sharing has picked up well in recent times in EU
- Entrants leasing full line sublease it on shared line or bit stream basis
- Franchisee model as being experimented for WiMax/ 3G by the government operators
  - Similar to full unbundling/ retailing
  - Shares revenue with the Incumbent
- Can we adopt a similar approach for wire-line local loops?
- Line sharing and bit stream access are not suitable for voice
  - Unless VoIP is used
  - Regulatory clarification: Can the incumbent provide VoIP to PSTN?

Factors that affect success of LLU

- Condition of the line
  - When is it advantageous for the incumbent
    - Poor -> full unbundling
    - Medium quality -> line sharing or bit stream access
    - Good -> No unbundling
- Lease Price
  - Lease price of the local loop charged by the incumbent to the new entrant
- Co-location costs charged by the incumbent in case of line sharing
- Given that broadband access is much more price elastic
  - How will the above costs affect subscription charges?
  - What will be the effect on broadband adoption?

Pricing

- Incumbent initially charges higher lease prices to maximize monopoly profit
  - New entrant uses an alternative platform or laying down local loop starts capturing the market
  - Incumbent starts reducing the lease price to attract the incumbent
- Incumbent unwilling to lease might change strategies as their facilities become *less essential*
  - Due to the existence of alternative platforms
- Is regulatory intervention required?
  - How to set ceiling pricing for the lease price?
  - How to set it across urban and rural areas?
  - Should Universal Service Obligation Fund be used for semi-urban/ rural areas?
  - Use of *sunset* clauses
    - Specify *ex ante* the period after which the incumbents facilities are no longer regulated

Intra or Inter Platform Competition

- Broadband Access by Internet subscribers
  - DSL: 87% ; Cable: 7.5%; Ethernet/ LAN: 4%; Wireless: 0.95%
- LLU encourages Intra platform competition
  - Promotes non-facility service based competition
- Current regulation promotes Facility based competition
  - Cherry picking in urban areas by the new entrants
- Where alternative platforms (e.g. cable) are not widely available, line sharing and bit stream access have been relatively successful (e.g. Belgium, Denmark)
- Inter-platform competition through Cable, DTH and HITS
  - Cable: digitization and two-way enabling has not picked up
    - Alternative local loops being implemented: not reliable, in select urban areas
  - DTH: Good penetration in semi-urban and even rural areas
  - HITS: Not yet taken off
    - Potential to increase digitization of cable homes
- What are the regulatory interventions that are required for alternative platform development for broadband access?

Wireless Local Loop

- Unbundle from BTS/ Node B/ Access Point
- Full unbundling: Local access provider provides service
  - Knows the demand; provides localized content; can provide in habited areas
- Shared access
  - Sharing of spectrum: virtual local loop operators
  - Trading of spectrum: unutilized spectrum chunk to a new entrant

Regulatory Questions

- Should LLU regulation be enforced or should we continue with facility based competition?
- How should lease price regulation be done to maximize social welfare?
- Should inter-platform competition be encouraged? What could be the regulatory mechanisms?
- How should ceiling prices, if at all price regulation to be done, be set for urban and rural areas?
- Should USO fund be used to support LLU for a limited period?
  - For improving line conditions for broadband access
  - For reducing local loop lengths for improved broadband access

Research Questions

- **Model strategies of the incumbent and the entrant if LLU is allowed**
  - Game theoretic or principal-agent problem
- **How to set lease price regulation? Should price regulation at all is required?**
  - If so, Cost based, options based
- **What are the effects of lease price regulation on broadband subscription charges? What will be its impact on broadband adoption?**
- **How to determine *sun set* periods for LLU regulation?**
- **How to determine USO fund support to promote broadband penetration through LLU in semi-urban, rural areas**
- **How to determine trading/ sharing process/ charges in case of wireless local loop unbundling?**