Access regulation and NGA networks

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Outline

- Parity of access in an NGA world: what is different?
  - Some illustrations from the French case
- New networks, new problems?
  - Infrastructure competition and foreclosure
  - Co-investment and collusion
  - Geographical access regulation
  - Access to legacy and NGA networks

1. Parity of access in an NGA world: what is different?

Remedies to foreclosure incentives

- Presence of bottleneck input + dominant vertical integrated firm → risks of foreclosure
- Standard remedies (transparency, cost orientation, non discrimination obligations, accounting separation) may be ineffective in preventing non price discrimination
- Parity of access as an alternative remedy
- Applied to legacy copper networks in telecoms
- How should the parity of access issue be applied to the next generation access networks (NGAN)?

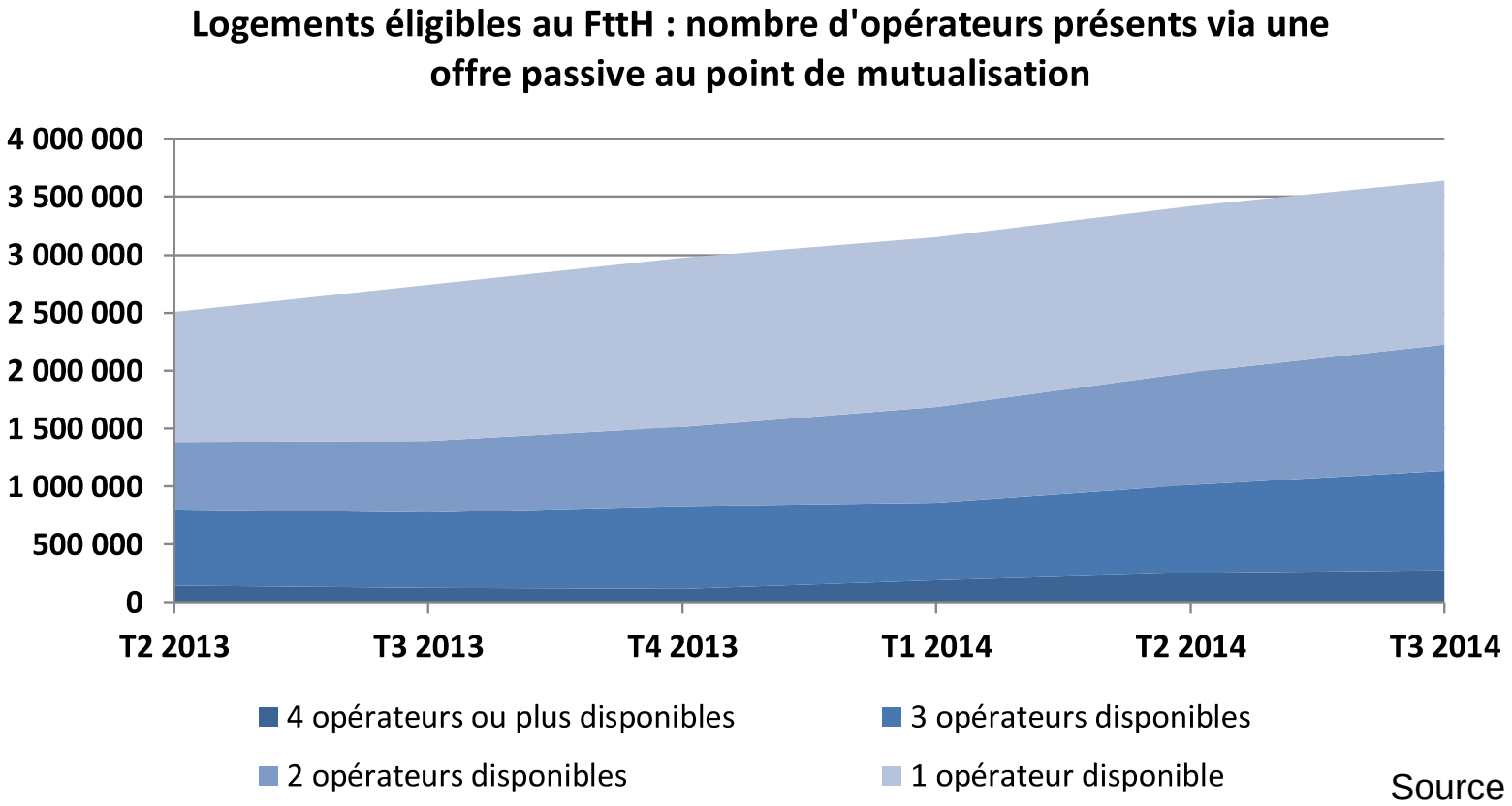
Legacy vs. NGA networks

- Looking at the case of France, what is different?

Legacy	NGA
Monopoly on infrastructure	Infrastructure competition
One dominant technology {xDSL}	A mix of technologies {VDSL, cable, fiber}
Private investors	Private and public investors
Investments sunk	Investments under way: upfront technology choices; deployment phase

Infrastructure competition

- One legacy copper network *versus* deployment of competing FTTH networks



Source : Arcep.

Infrastructure competition

- Does infrastructure competition remove the need for access regulation, parity of access?
  - Asymmetric regulation of access to ducts
  - Symmetric regulation of (passive) access to fiber
- Does it warrant a differentiation of access remedies according to the presence of competing infrastructures or geography?
  - Different regulatory schemes for “very dense areas” and “less dense areas”
  - *Very dense areas*: areas where infrastructure competition is deemed to be possible; defined by Arcep.
  - *Less dense areas* (= the rest)

Infrastructure competition

- Very dense areas (5.5m households)
  - Infrastructure sharing concerns only in-house fiber
  - The co-investors share the investment costs for in-house fiber
  - Further distinction btw buildings with more than 12 apts and other building; low density zones in very dense areas…
- Less dense areas (17.7m households)
  - Infrastructure sharing concerns the local fiber network (access point for 1000 fiber lines)
  - Two access schemes: co-investment & fiber access
  - The co-investors sign long-term (20-30 years) access contracts where they have the right to use a given percentage of lines (5%, 10%, …) in a given area.

A mix of technologies

- Very large market share of xDSL technology in broadband market (98%)
- A mix of technologies for NGA:
  - In terms of number of eligible lines: cable (8,632 million lines), FTTH (3,640 million lines) and VDSL2 (2,877 million lines)
- Some operators can mix different technologies
  - Concerns from Arcep about SFR-Numericable that the merged entity could mix technologies in an anti-competitive way

Private and public investors

- A significant share of public investment for NGAN, in particular in rural areas?

Nombre de prises FttH	Zones très denses	Zones moins denses	Total
Initiative privée	2 558 000	539 000	**3 097 000**
Initiative publique	188 000	355 000	**543 000**
Total	**2 746 000**	**894 000**	**3 640 000**

- Objective of Arcep: homogeneity of access prices in “less dense areas” → pricing model
- Public-funded networks: access prices should be comparable to those on privately-funded networks (independently of costs and revenues)– EU rules for State aids

Investments under way

- Upfront: technology choices
  - Avoid design decisions that would make access impossible or favor the vertically integrated firm relative to its competitors
  - Example of technology choices for FTTH in France: PON vs P2P
- Deployment phase
  - Should not give an advantage to the vertically integrated firm
  - Announcement of roll-out; 3-month delay before opening commercial operations in a building

2. New networks, new problems?

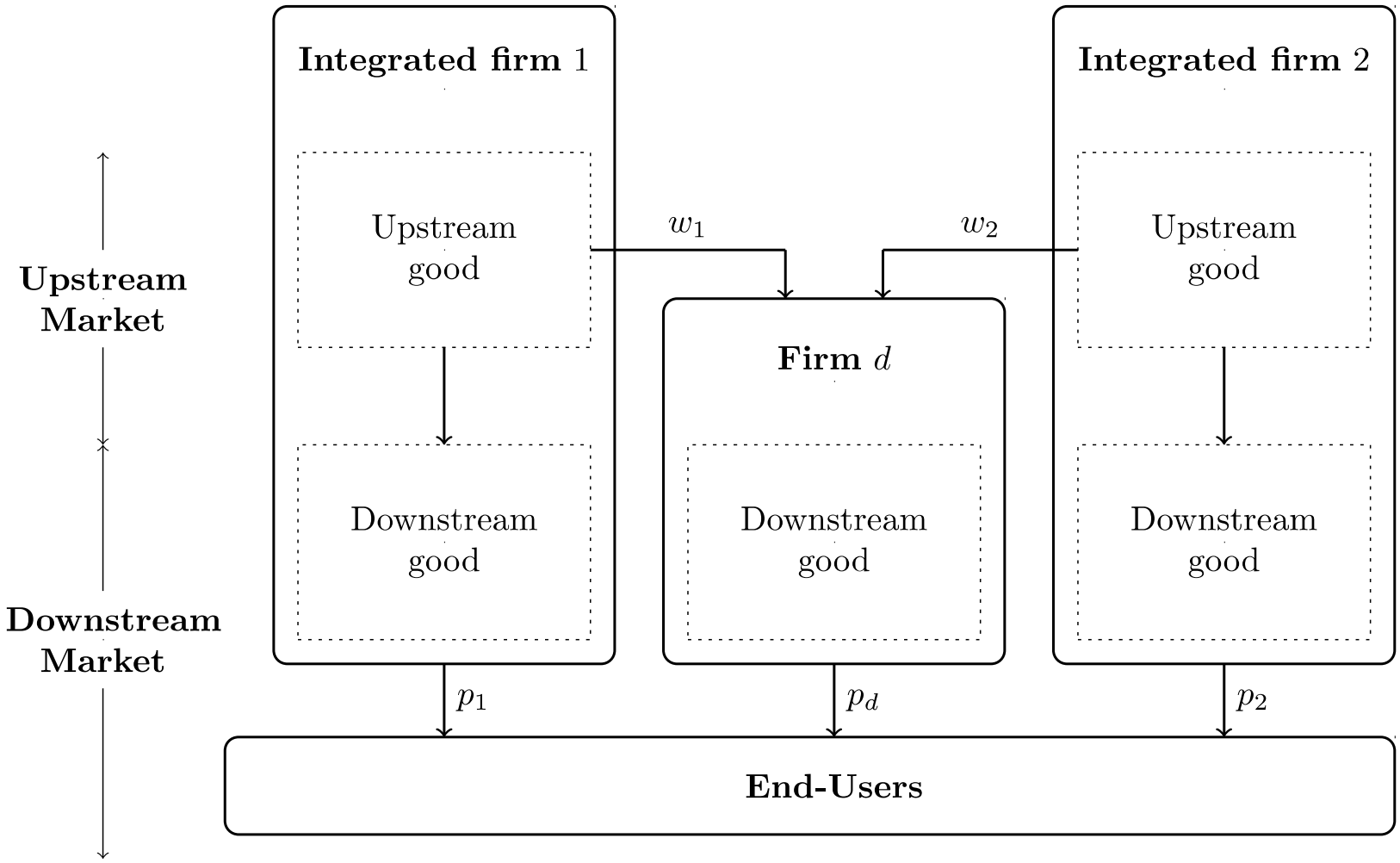
New problems

- Infrastructure competition and foreclosure
- Co-investment and collusion
- Geographical access regulation
- Access to legacy and NGA networks

Infrastructure competition and foreclosure

- With more than one infrastructure operator, is it still needed to monitor access parity and other regulatory provisions to ensure non discrimination, or does competition between access providers fix the case?
- *In other words*: does competition between vertically-integrated firms erode their incentives to foreclose pure downstream rivals?
- Economic literature:
  - Even with infrastructure competition, foreclosure, complete or partial, can still arise at the market equilibrium!

Infrastructure competition and foreclosure



Infrastructure competition and foreclosure

- Assume that one of the two vertically integrated firms has a larger pre-entry customer base
- Ordover and Shafer (2007) show that the market equilibrium then depends on which integrated firm suffers more from cannibalization by the entrant
- "Proportional" cannibalization
  - The wholesale market is perfectly competitive
  - The smaller integrated firm has incentives to supply the entrant if the larger integrated firm does not; if the small firm supplies the wholesale market, the larger firm compete
- "Own-supplier" cannibalization
  - Foreclosure equilibrium! Due to large cannibalization effect for the supplier, no incentive to supply the entrant

Infrastructure competition and foreclosure

- What if there is an obligation to provide access (or a price cap on the access price)?
- Conventional wisdom: the wholesale market can be analyzed as a separate market and the Bertrand logic applies
  - Firms should keep undercutting each other until the marginal cost is attained
- Misleading! The wholesale and retail markets cannot be analyzed in isolation (Bourreau et al., 2011)
  - The wholesale market might not be competitive

Infrastructure competition and foreclosure

- Existence of non-competitive equilibria due to a "softening effect"
  - For the integrated firm that serves the wholesale market, consumers lost on the retail market can be recovered on the wholesale market → this firm is not aggressive in the retail market
  - The integrated firm that does not serve the wholesale market earns higher retail profits
- If the softening effect is strong enough, the wholesale market is not competitive
- General message
  - Infrastructure competition does not necessarily give strong incentives to supply the wholesale market in competitive terms

Co-investment and collusion

- Can co-investment between infrastructure operators pave the way to some sort of collusion?
- At the wholesale level?
  - Co-investment and access are substitute infrastructure arrangements → attractive access conditions reduce incentives to co-invest (Bourreau, Cambini and Hoernig, 2014)
  - Even if co-investors compete at the wholesale level, the softening effect is at work → non competitive (monopoly-like) equilibria can arise
- At the retail level?
  - Information exchanges between operators
  - Lower differentiation due to shared infrastructure → higher propensity to collude? (e.g., Lambertini et al., 2002)

Geographical access regulation

- What is the relevant geographical level for access?
- Investments have a geographical dimension; hence, market structure will vary across geographies
- It is more the market structure that matters in the end than the geography
- Bourreau, Cambini, Hoernig (2013):
  - a uniform access regime is not sufficient to spur investment, it leads to too much duplication but too low total coverage
  - a differentiated remedies regime can achieve the social optimum with the proper instruments (e.g., price floors and caps)

Access to legacy and NGA networks

- How can access regulation and supervision on the legacy and NGA networks be coordinated and governed, given that the former involves the traditional incumbent while the latter may extend to other infrastructure operators?
- Deployment of NGA networks depends on access terms to copper… but in ambiguous way
- The relationship between the socially optimal fiber and copper access prices depends on which firm owns the fiber network that is subject to access (Bourreau, Cambini and Dogan, 2014)
  - If the incumbent owns the fiber network, the socially optimal access price to fiber is always positively related to the copper access price
  - If the entrant owns the fiber network, the socially optimal access price to fiber can be negatively related to the copper access price.

Concluding remarks

- The transition from the copper legacy network to the NGA networks calls for revisiting the bottleneck problem and remedies such parity of access
- Market structure is changing with the of development of infrastructure: warrants a move to (more) symmetric regulation?

References

- Ordover, J. & G. Shafer (2007). “Wholesale access in multi-firm markets: When is it profitable to supply a competitor?” *International Journal of Industrial Organization*.
- Bourreau, M., Hombert, J. Pouyet, J. & N. Schutz (2011), “Upstream Competition between Vertically Integrated Firms,” *Journal of Industrial Economics*.
- Bourreau, M., Cambini, C. & S. Hoernig (2013), “Geographic Access Rules and Investment.”
- Bourreau, M., Cambini, C. & P. Dogan (2014), “Access regulation and the transition from copper to fiber networks in telecoms,” *Journal of Regulatory Economics*.
- Bourreau, M., Cambini, C. & S. Hoernig (2014), “Cooperative Investment, Uncertainty and Access.”