

EU Broadband Regulation and Economics: Geographical Remedies and Co- investment

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What we will discuss

- ▶ The need for a huge amount of financial resources to boost ultra-fast broadband networks pushed EU to revise the regulatory framework
- ▶ In December 2018, the new European Electronic Communications Code (EECC) introduced new regulatory tools:
 - ▶ Geographical market definition and geographical access remedies
 - ▶ Co-investment
 - ▶ Wholesale-only model (vertical separation vs. integration)
- ▶ Confirmed in the new Draft Recommendation on Gigabit Connectivity (October 2023)



Geographical access “regulation”

- ▶ It requires National Regulatory Authorities (NRAs) to define relevant geographic markets within their national territory by taking into account, inter alia, the degree of infrastructure competition in those areas:
 - ▶ a) by defining sub-national markets, followed by a separate analysis and assessment of market power for each of these markets, or
 - ▶ b) by defining one national market, assessing market power within this market, and then differentiating remedies to take into account geographic differences
- ▶ Data needed to this aim are the following: (i) the number and characteristics of competing networks, (ii) the distribution of and trends in market shares, (iii) prices and (iv) behavioural patterns.

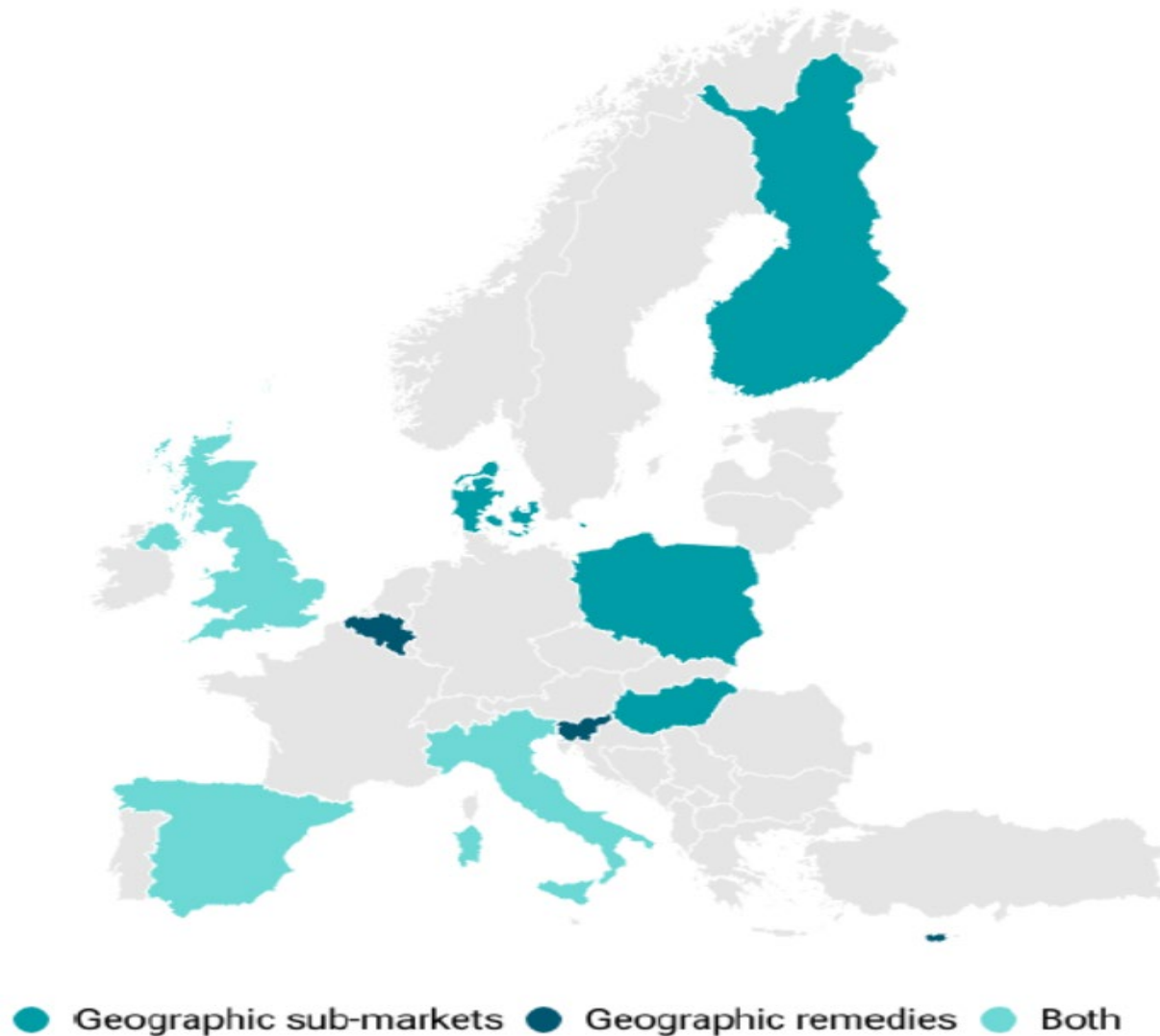


Geographical access “regulation”: the goal

- ▶ NRAs should take geographic differences in competitive conditions into account even at the level of market definitions.
- ▶ Where separate geographic markets have been identified, NRAs should ensure that regulation is withdrawn in geographic markets that are found to be effectively competitive in the absence of regulation → **pricing flexibility**
- ▶ If such differences are not stable enough, NRAs should apply geographically segmented remedies if necessary to solve, in a proportionate way, the competition problems identified in the various areas defined → **wholesale regulation where competition is absent or limited.**
 - ▶ **LRIC+** in case of coverage need (Bourreau, Cambini, Hoernig, 2015)



Geographical access “regulation”



Co-investments

- ▶ **Types of operational mode - BEREC (2020):**
 - ▶ ***joint-venture model*** – when an SMP operator and the co-investor(s) would be co-owners of a new entity or company, responsible for the deployment of the VHCN.
 - ▶ ***reciprocal access model*** – when an SMP operator and the co-investor(s) would reach a long-term risk sharing agreement whereby they would each be responsible for deploying and operating their respective own VHCN in geographically separate areas and give access to it to the other co-investors.
 - ▶ ***one-way access model*** – when an SMP operator and the co-investor(s) would reach a long-term risk sharing agreement whereby the former would build up the VHCN and grant access to the other coinvestor(s)



Policy issues on co-investment

▶ Operational modes

Trade-offs for firms

Cooperative arrangements

Joint venture

Complementarities and synergies

Commitment

Contractual arrangements

Reciprocal access

One-way sharing

Lower transaction costs

Flexibility

Key for society: minimize risks of unilateral and coordinated effects through proper **design of the agreement** → **checklist**



Policy issues on co-investment

- ▶ **Checklist to mitigate potential anti-competitive effects:**
 - ▶ Access or transfer prices should **not be set at excessive** levels;
 - ▶ The **strategic independence** of each partner should be guaranteed;
 - ▶ **No exclusivity provisions** for entering the agreement;
 - ▶ **Pricing:** avoid opportunism from late co-investors; difference conditions for late entrants;
 - ▶ **Multifiber vs. single fiber agreement:** multifiber favors competition so allowed also in black areas

- ▶ **Alternative:** Ex ante obligation to cooperate to favour co-investment (the French case)



Empirical evidence

- ▶ Lebourges and Liang (2021) on the French market.
- ▶ Detailed data on roll-out of FttH networks and co-investment agreements in 3573 French municipalities from 2013 to 2016.
- ▶ Results show that 1% co-financing share by co-investors leads to 0.8% increase in ultra-fast broadband coverage.
- ▶ Moreover, co-investment leads to more FttH coverage in co-investment areas than areas without co-investment.
- ▶ Finally, they show that 1% increase in co-financing share by co-investors increases Orange's FttH adoption by 1.2% and decreases Orange fixed broadband (ADSL and FttH) penetration by 1.1%.
- ▶ Hence, competition and investment are likely to increase, as suggested by the theory (Bourreau, Cambini, Hoernig, 2018; 2022 with Vogelsang).



EU cases

Country	Partners	Year	Type of Agreement	Areas	Coverage target (% households)
<i>France</i>	Orange- SFR	Nov 2011	Reciprocal access	Grey	34
	Orange - Free	July 2011	Co-financing only	Grey	17
	Orange-Boygues	January 2012	Co-financing only	Black and Grey	37
	Boygues-SFR	2010	Co-financing only	Black and Grey	10
<i>Germany</i>	Telekom-Net Cologne	2012	Reciprocal access	Black and Grey	-
	Telekom-Telefonica	2013	Co-financing only	All	65
	Telekom-vari OLO	dal 2012	Co-financing only	All	-
	Telkom-EWE	2019	Joint venture	Black and Grey	3,7
<i>Ireland</i>	ESB-Vodafone	2015	Joint venture	Black	-
<i>Portugal</i>	Vodafone-Optimus	Dec 2010	Reciprocal access	Black	12
	Vodafone - DST	May 2014	Reciprocal access	Black and Grey	5
	Vodafone - PT	July 2014	Reciprocal access	Grey	22
	Vodafone-Optimus	Oct 2017	Reciprocal access	All	52
	Vodafone, Optimus e dstelecom	July 2019	-	All	22-29
<i>Spain</i>	Telefonica-Jazztel	Aug 2012	Reciprocal access	Black	16
	Orange-Vodafone	March 2013	Reciprocal access	Black	16
	Mas Movil - Orange	Oct 2016 (ext in 2018 and 2019)	Reciprocal access	All	-
	Telefonica-Vodafone	March 2017	Co-financing only	All	-
	Telefonica-Orange	2018	Co-financing only	Black and Grey	-
	Mas Movil - Vodafone	Sept 2018	Reciprocal access	All	7

New regulatory objectives and incentives

- ▶ Under the new Code, these incentives are represented by the lifting of regulatory burdens in two specific cases in which some kind of «open infrastructure sharing» is guaranteed:
 - ▶ co-investments initiatives; and
 - ▶ wholesale-only operators.
- ▶ What's the main differences between the two solutions?



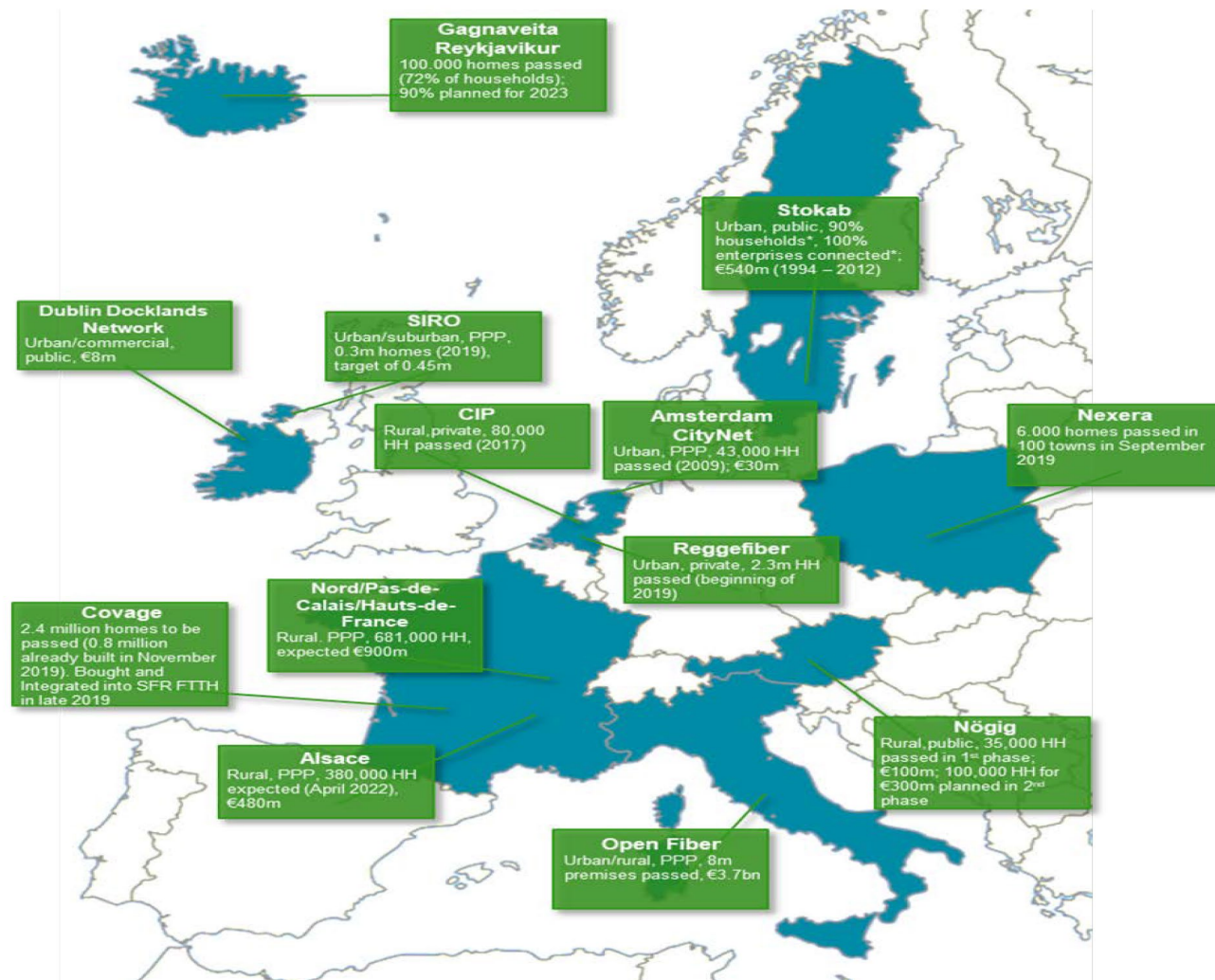
Characteristics of investment models in EECC

	Wholesale-Only model	Co-investment
Access networks involved	Copper, mixed and fibre accesses (FTTH, FTTB, FTTC, Copper)	<ul style="list-style-type: none"> • FTTH, FTTB (in case of technical problems for the in-house wiring building) • Optical fiber elements up to the base station
Players	Generally new entrants or incumbent's network spin-off	Incumbents & other active vertically integrated operators
Governance	Vertically "separate" company needed	Vertical integration allowed
Requirements for regulatory benefits	All controlling, parent and subsidiary companies do not carry out retail activities	Binding «open» co-investment commitments approved by the NRA (+ double lock EC/BEREC)
Regulatory impact for SMP operators	Cost-orientation (!!) in monopolistic areas, while no-cost orientation in competitive areas (if any)	Limited ex-ante obligations only for newly deployed fiber elements in the co-investment agreement (art. 76)
Effects on competition	Wholesale infrastructure monopoly/concentration and service-based retail competition in downstream retail markets	Wholesale and retail facility-based competition, among vertically integrated operators

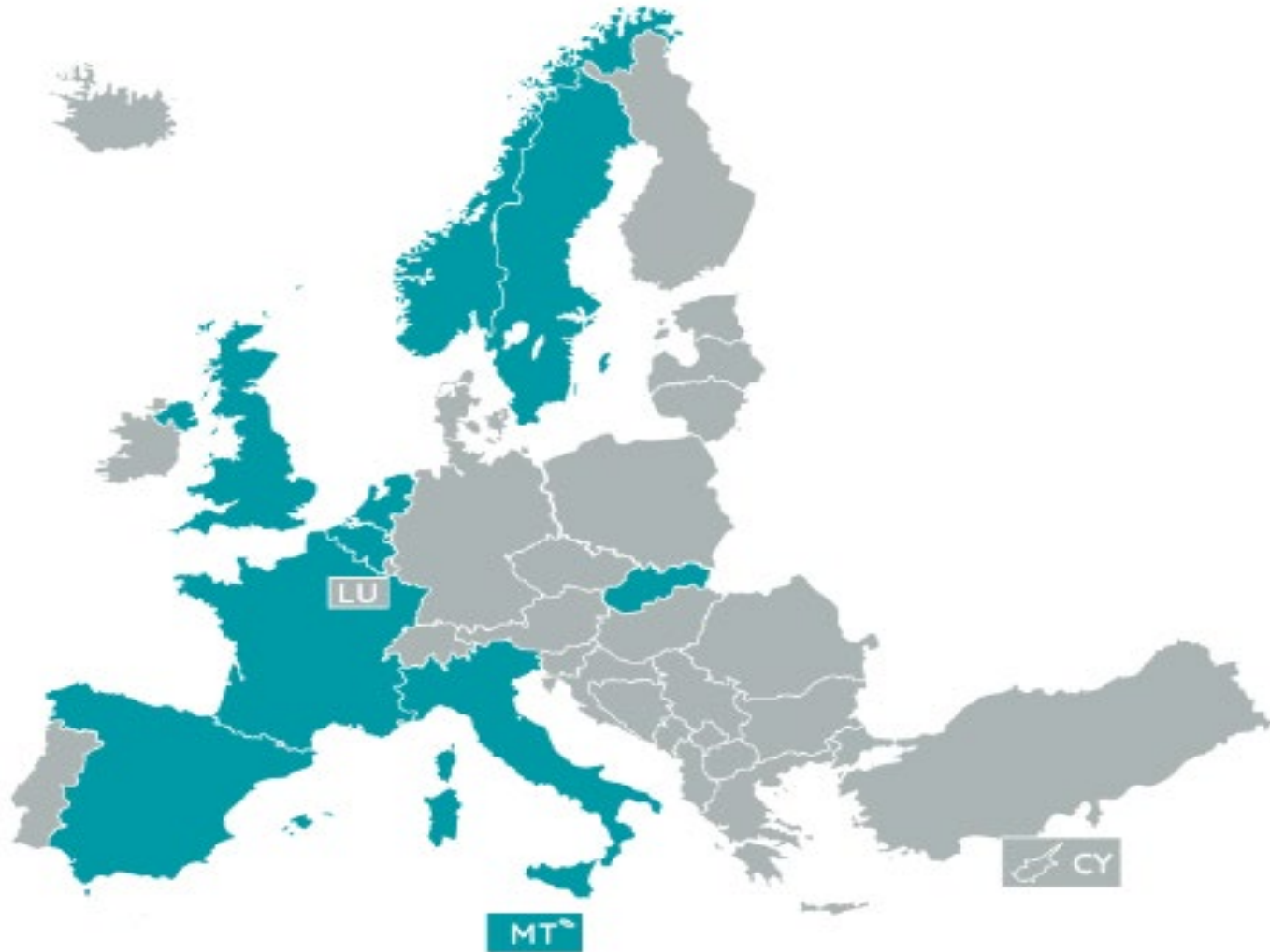


The wholesale-only modes in fixed networks

Figure 2-1: Wholesale only initiatives – past, present and future



A recent discussion ... copper switch off



Copper switch off: EU

- ▶ The greatest progress has been made in Estonia, with 70% of copper exchanges closed in 2018 and plans to remove copper access for 60% of broadband subscribers by 2020
- ▶ Spain has an active copper switch-off program to FTTH. To be concluded in 2030.
- ▶ Slow process in Portugal with aim of 75% switch-off by 2030
- ▶ Sweden has an active program, but focus on rural/wireless
- ▶ Planned switch-off in Italy for feeder segment (also FTTC)
- ▶ France recently announced a full switch off in 2030



Copper switch off: benefits

- ▶ Lower maintenance cost compared with copper
- ▶ Access technology equipment for fibre occupies 15% of the space occupied by copper; and
- ▶ Copper switch-off saves 60% energy cost
- ▶ Reliability; fibre is 70-80% more reliable than copper. 60% fewer costly truckrolls and savings of 40-60% on maintenance
- ▶ On consumer side, in a 2017 representative survey of consumers in the fibre-rich Swedish market, VIK found that 82% of FTTH customers were happy with their service compared with only around 50% of DSL customers
- ▶ Copper switch-off can also significantly improve the business case for FTTH by increasing penetration on the FTTH network, thereby supporting a more widespread deployment



The new draft recommendation (2023): some new policy tools

- ▶ **Long term contracts:** it allows SMP operators and access seekers to share some of the investment risk by differentiating wholesale access prices according to access seekers' chosen level of commitment.
- ▶ **Margin squeeze tests:** NRAs may also apply an ex ante margin squeeze test to regulated wholesale inputs where necessary, in particular: (i) in the context of long-term pricing and volume discounts; or (ii) to ensure sufficient economic space between different regulated wholesale inputs.
- ▶ **Definition of anchor products:** The regulated anchor is a cost oriented wholesale access product (or a combination thereof) which constrains VHC prices in such a way that related services will be priced in accordance with consumer willingness to pay a premium for the additional capacity and functionalities which a VHC based retail product can provide in comparison with retail products provided on the basis of one or more the regulated anchors.
- ▶ **Copper network decommissioning:** facilitating switch off ... but only towards FTTH connections.



References: Academic Papers

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- ▶ M. Bourreau, C. Cambini and S. Hoernig (2012). “Ex-ante regulation and co-investment in the transition to next generation access”, *Telecommunications Policy* 36, 99-406.
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Appendix: Geographical access “regulation”

	Presence of sub-national markets	Geographic unit	Minimum number of operators for area to be deemed competitive	Other index of competition
Italy	<p>NRA published its decision of its fixed market review identifying two different geographic markets:</p> <ul style="list-style-type: none"> municipality of Milan rest of Italy 	<p>NRA imposed geographically differentiated remedies on TIM (the incumbent) with lighter obligations in more competitive areas.</p> <p>However, in these areas the price of VULA is still cost oriented, because the minimum threshold of fibre take-up (which is one of the requirements for lighter remedies) was not reached.</p>	<p>NRA considered competitive the areas with at least two fibre operators alternative to TIM, each of which covers 60% of customers' premises for a total coverage (the two alternative networks together) >75%.</p>	<p>Coverage of alternative networks:</p> <ul style="list-style-type: none"> Presence of at least two alternative access networks (FTTC or FTTH) each of which covers 60% of customers' premises; Total coverage of both alternative networks not less than 75% <p>TIM's retail NGA market share (by connections) ≤40%</p> <p>TIM's wholesale NGA active services (VULA and bitstream) < 80%</p>
Spain	<p>Two subnational markets:</p> <p>1.1: 696 municipalities (competitive areas)</p> <p>1.2: 7,453 municipalities</p>	<p>Administrative area</p> <p>Municipality.</p> <p>No access obligation in submarket 1.1</p>	<p>Three fibre networks each with at least 20% coverage</p>	
UK	<p>NRA identified three geographic areas:</p> <ul style="list-style-type: none"> area 1 – competitive areas area 2 – with potential for material and sustainable competition to BT in the commercial deployment of competing networks area 3 – without potential for material and sustainable competition to BT in 	<p>Postcode (around 12,000).</p> <p>Slightly relaxed charge controls in more competitive areas. Regulation only for connections ≤ 40 Mbits</p>	<p>BT (Openreach) + Virgin Media or CityFibre with at least 50% homes passed</p>	