



# *Effective Regulation for the deployment of high-speed access networks in Europe*

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# Questions

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1. What is the effect of (ex-ante, cost-oriented) regulation on investment?
  - What is the role of competition?
  - ⇒ What can market based solutions achieve? How should regulation look like?
2. In which direction will “the market” (the industry) develop
  - ⇒ Consolidation, price levels and what to do about it
3. What is the role of government beyond regulation?
  - ⇒ subsidies, national broadband plans, what else?

# Answers – A Preview

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1. Ex-ante regulation as the problem rather than the solution
  - Regulatory volatility, hold up problem. Long-term investment vs. predictability of regulatory framework
  - Market solution would work

⇒ Structural rather than behavioral “remedies” needed
2. Different views on consolidation by EC and industry
3. Regulated prices, subsidies and investment:
  - consumers “used” to low prices, but quality is costly
  - Public provision via subsidies double-edged sword

# Better Regulation Directive 2009/140/EC Art. 8

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The national regulatory authorities shall apply objective, transparent, non-discriminatory and proportionate regulatory principles by, inter alia:

- (a) **promoting regulatory predictability** by ensuring a consistent regulatory approach over appropriate review periods;
- (b) ensuring that, in similar circumstances, there is no discrimination in the treatment of undertakings providing electronic communications networks and services;
- (c) safeguarding competition to the benefit of consumers and promoting, where appropriate, infrastructure-based competition;
- (d) **promoting efficient investment and innovation in new and enhanced infrastructures**, including by ensuring that any access obligation takes appropriate account of the risk incurred by the investing undertakings and by permitting various cooperative arrangements between investors and parties seeking access to diversify the risk of investment, whilst ensuring that competition in the market and the principle of non-discrimination are preserved;
- (e) taking due account of the variety of conditions relating to competition and consumers that exist in the various geographic areas within a Member State;
- (f) **imposing ex-ante regulatory obligations only where there is no effective and sustainable competition** and relaxing or lifting such obligations as soon as that condition is fulfilled.";

# Investment risk and regulatory commitment

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- EC NGA-recommendation, September 2010
- NRAs should estimate **investment risk**, inter alia, by taking into account the following factors of uncertainty: (i) **uncertainty relating to retail and wholesale demand**; (ii) uncertainty relating to the costs of deployment, civil engineering works and managerial execution; (iii) uncertainty relating to technological progress; (iv) uncertainty relating to market dynamics and the evolving competitive situation, such as the degree of infrastructure-based and/or cable competition; and (v) macroeconomic uncertainty. **These factors may change over time, in particular due to the progressive increase of retail and wholesale demand met. NRAs should therefore review the situation at regular intervals and adjust the risk premium over time, considering variations in the above factors.**

# Pro-investment turn of the EC?

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**MEMO**

Brussels, 12 July 2012

**Enhancing** the broadband investment environment – policy statement by Vice President Kroes

# Pro-investment turn of the EC?

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European Commission

Press release

Brussels, 11 September 2013

## Commission proposes major step forward for telecoms single market

- EU-wide and roaming-free mobile plans;
- Simpler rules to help companies invest more and expand across borders;
- First-ever EU-wide protection of net neutrality;
- Abolishing premiums for international phone calls within Europe

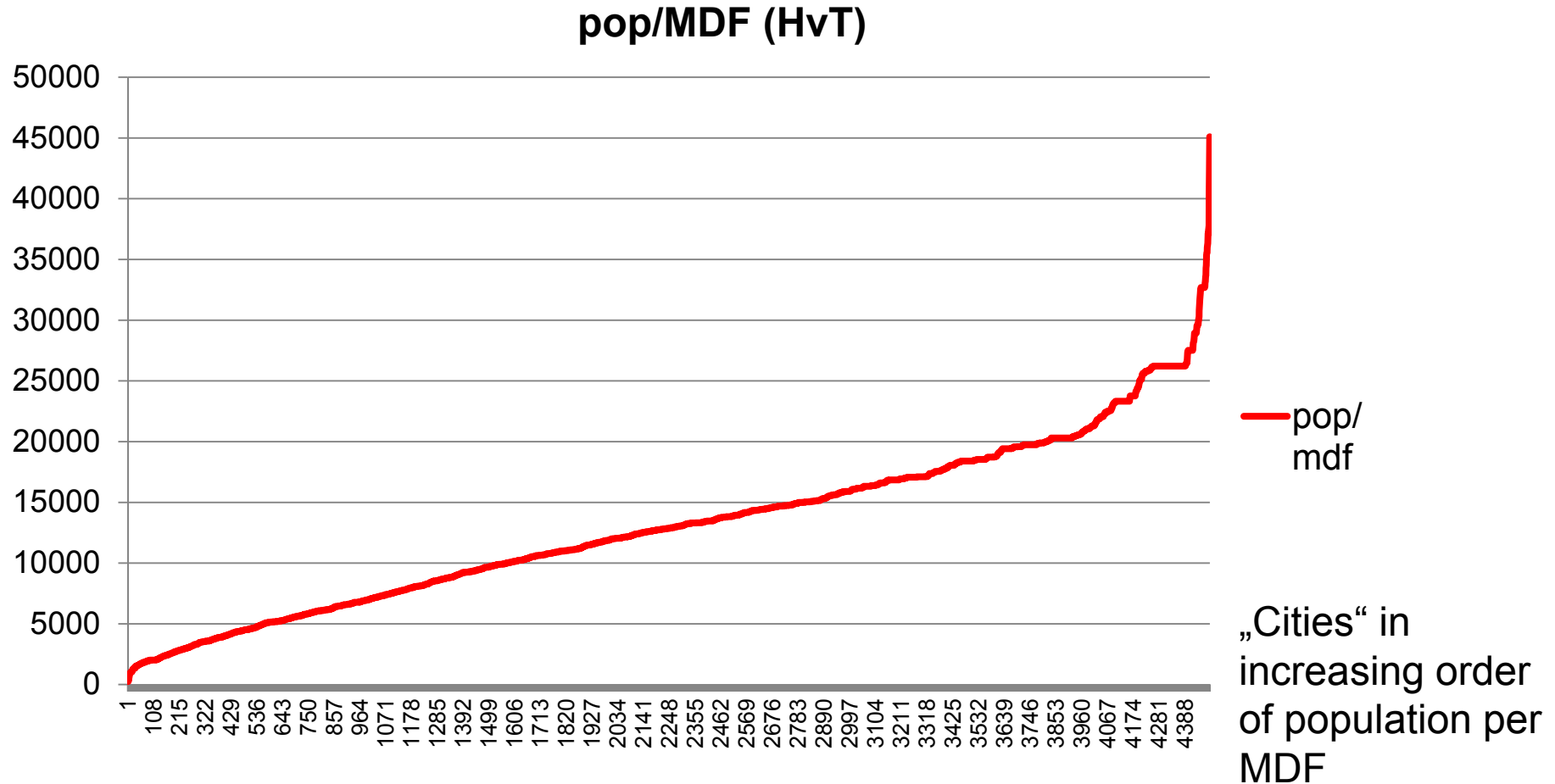
# Impression

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- Investment is at issue, not regulating an existing network
  - ⇒ Regulators (Commission) are afraid of too little investment and failure to meet the ambitious policy goals
  - ⇒ However, (still) want to keep full control and don't really trust in market forces.
    - Positive signs (EC on wholesale broadband prices in Austria, Italy)
    - Negative signs: international roaming, MTRs, emphasis on discrimination and margin squeeze
  - ⇒ (Still) Volatility and lack of predictability?
  - ⇒ No bold steps like US, Switzerland
- Structural rather than behavioral remedies required
  - ⇒ (ex-post) competition policy (as safeguard)

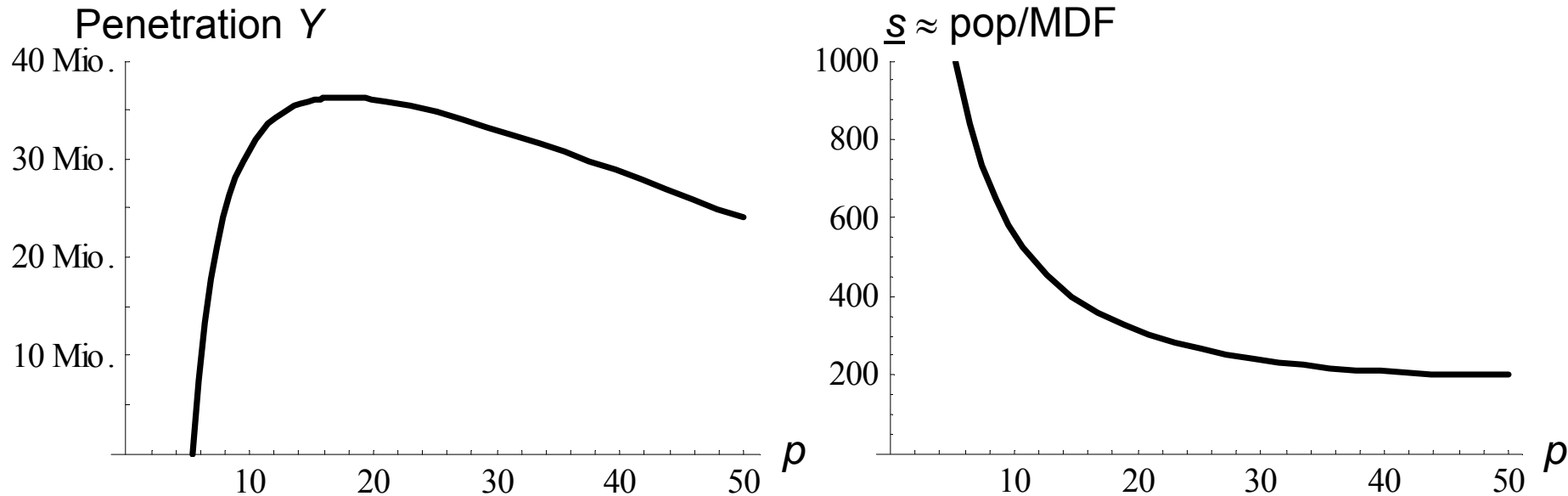


# Population per MDF in 2000 German “cities”



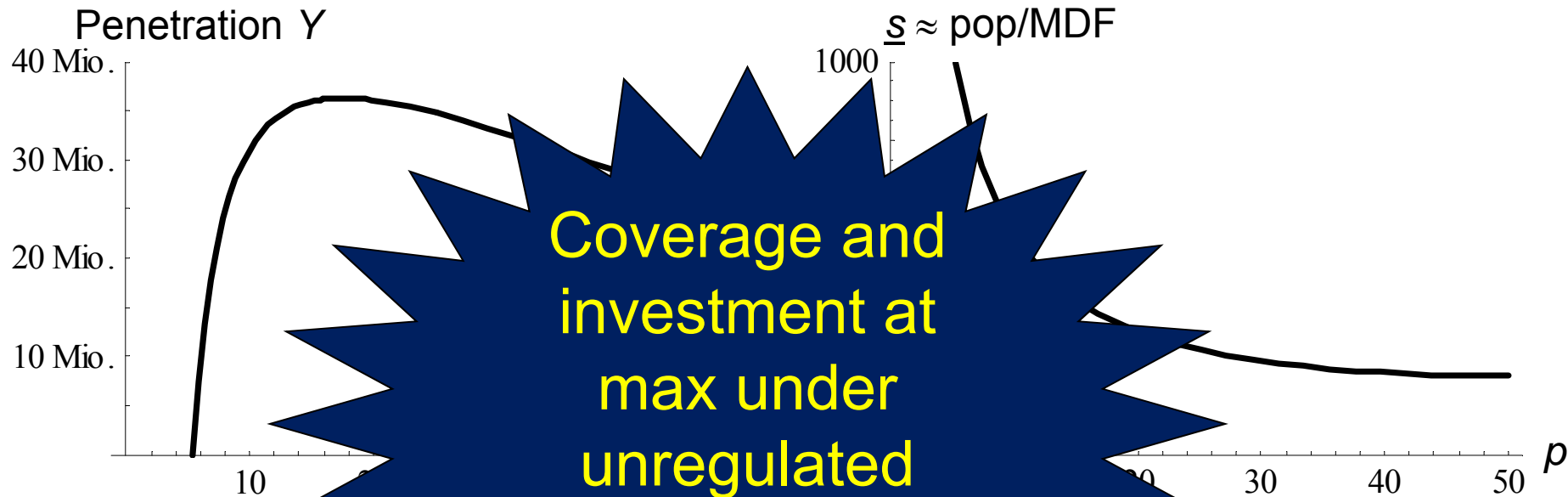
→ Population distributed rather unevenly across exchanges

# Penetration and coverage as a function of price cap $p$



- Penetration initially increases with decreasing prices. However, as the price cap becomes very low, penetration eventually decreases.
  - ⇒ Price decrease increases demand in covered regions
  - ⇒ Monopolists invests less and coverage and number of potential consumers decreases

# Penetration and coverage as a function of price cap $p$



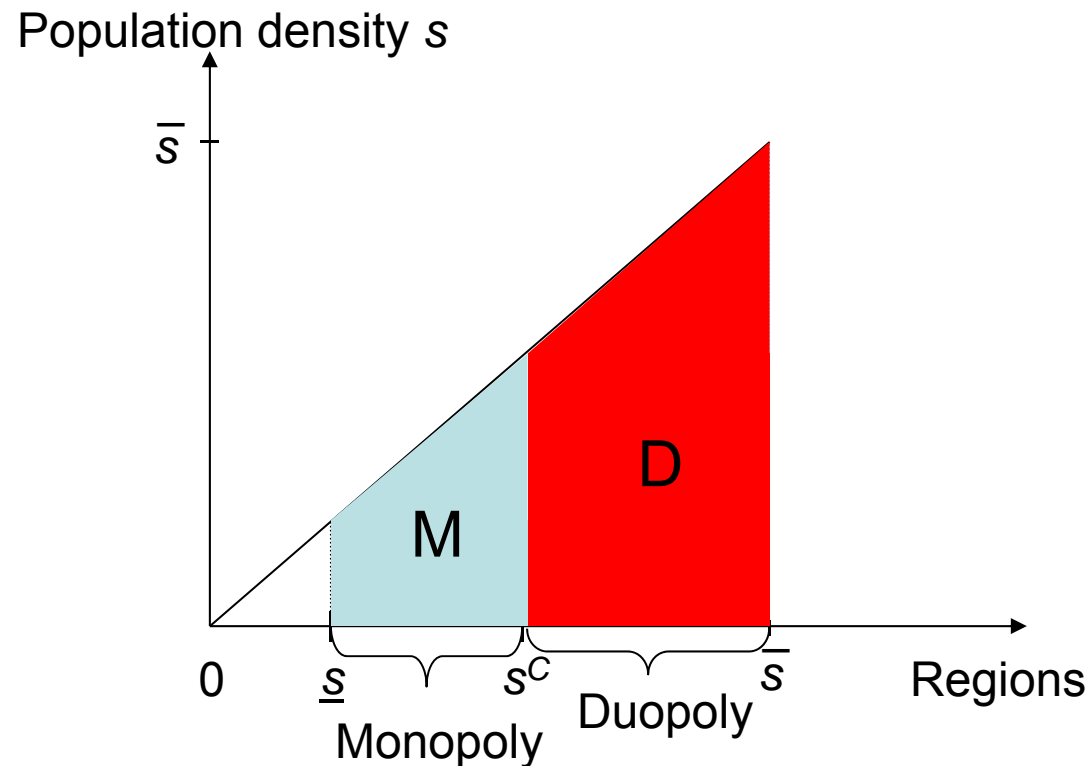
Coverage and investment at max under unregulated monopoly

⇒ Schumpeter!

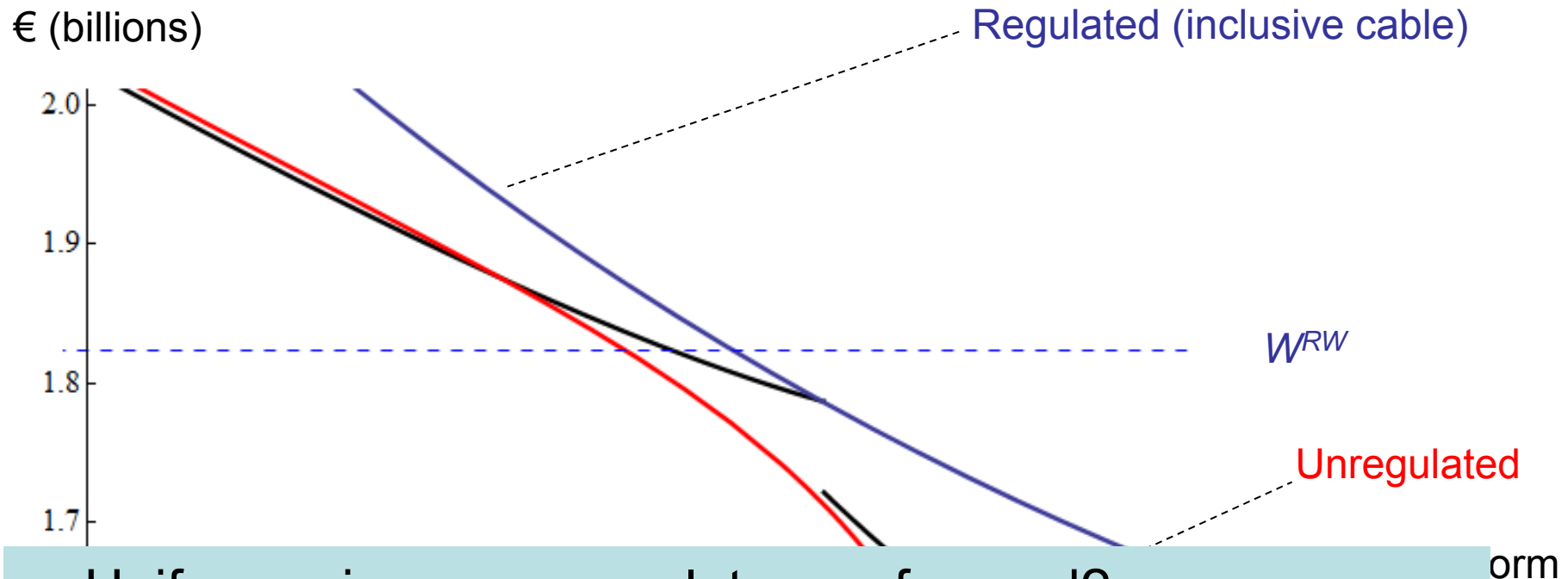
- Penetration is maximized at a price cap that is higher than the unregulated monopoly price. However, as the price cap  $p$  increases, the price cap  $p$  becomes very low, penetration eventually decreases.
  - ⇒ Price decrease increases demand in covered regions
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# Facilities-based competition with uneven population distribution

- Differentiated Bertrand model
- unregulated or uniform-pricing rule for incumbent



# Welfare under facilities-based competition



- ⇒ Uniform prices as a regulatory safeguard?
- ⇒ Differences in welfare are small.
- ⇒ Even regulation by an omniscient and benevolent regulator cannot improve much on the unregulated situation

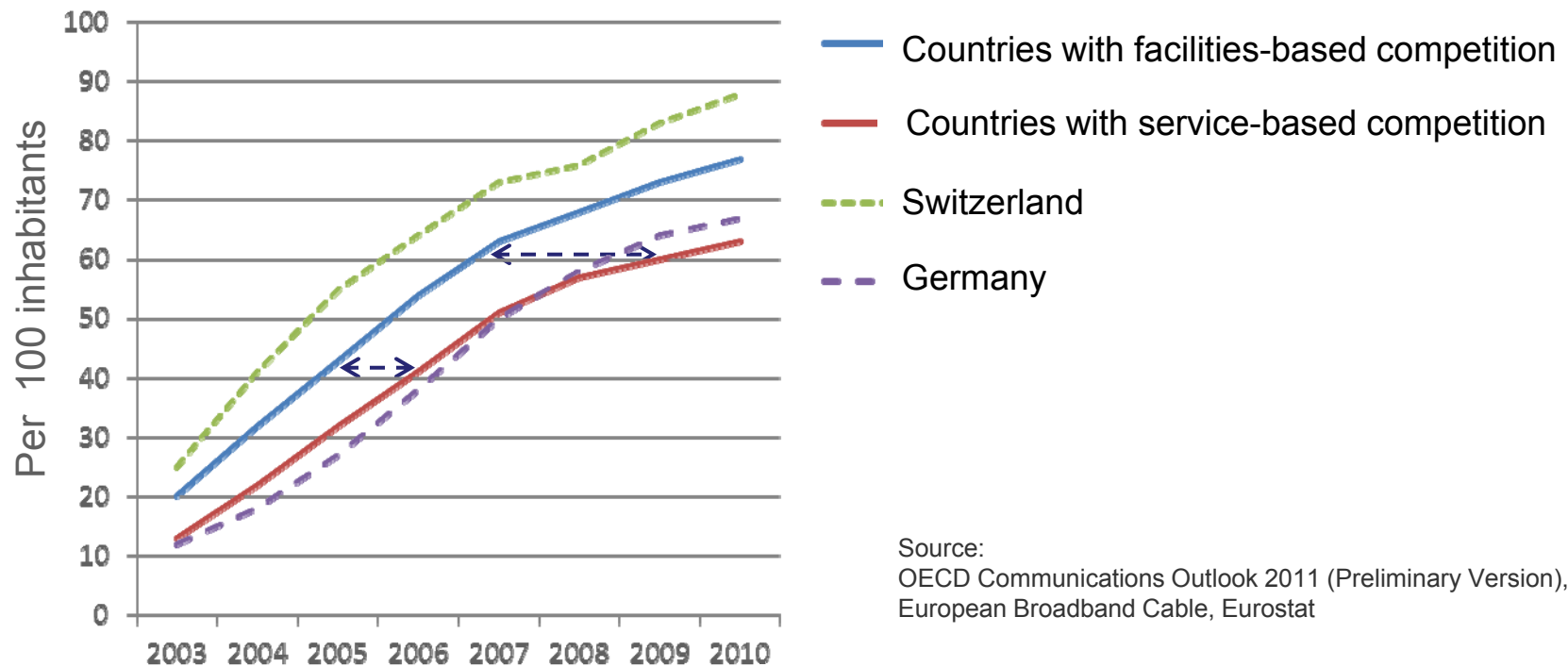
# „Obvious truths“

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- Framework: incumbent “monopolist” with many regional markets of different size (MDFs)
- Highest incentive to invest for an unregulated monopolist
  - Incumbent’s decision to invest: Invest  $\Leftrightarrow \Pi(s) \geq f$ 
    - $\Rightarrow$  Schumpeter
    - $\Rightarrow$  Open-access-debate (Chicago doctrine: „one monopoly profit“)
- Underinvestment from total welfare perspective
  - Consumer surplus effect
  - Remark: Subsidies? Strategic behavior by and windfall gains for firms/certain regions/ certain consumers?
    - Which governmental level should decide/pay? Political economy!  
Overinvestment in certain regions?

# Facilities-based vs. service-based competition

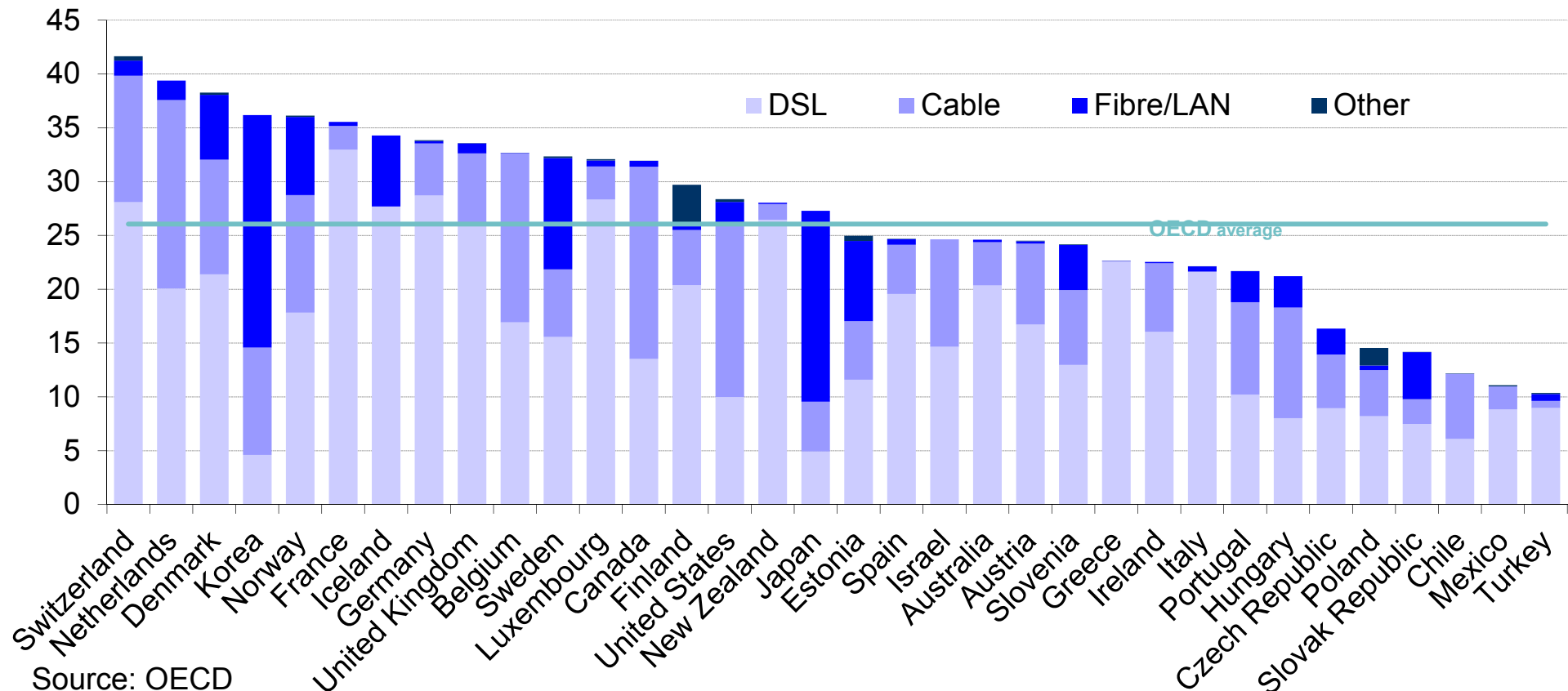
Evolution of broadband penetration in western European countries



→ Countries with facilities-based competition (cable homes-passed > 75%) exhibit more dynamic markets

# High-speed internet connections in OECD-countries

OECD fixed (wired) broadband subscriptions per 100 inhabitants by technology, June 2012



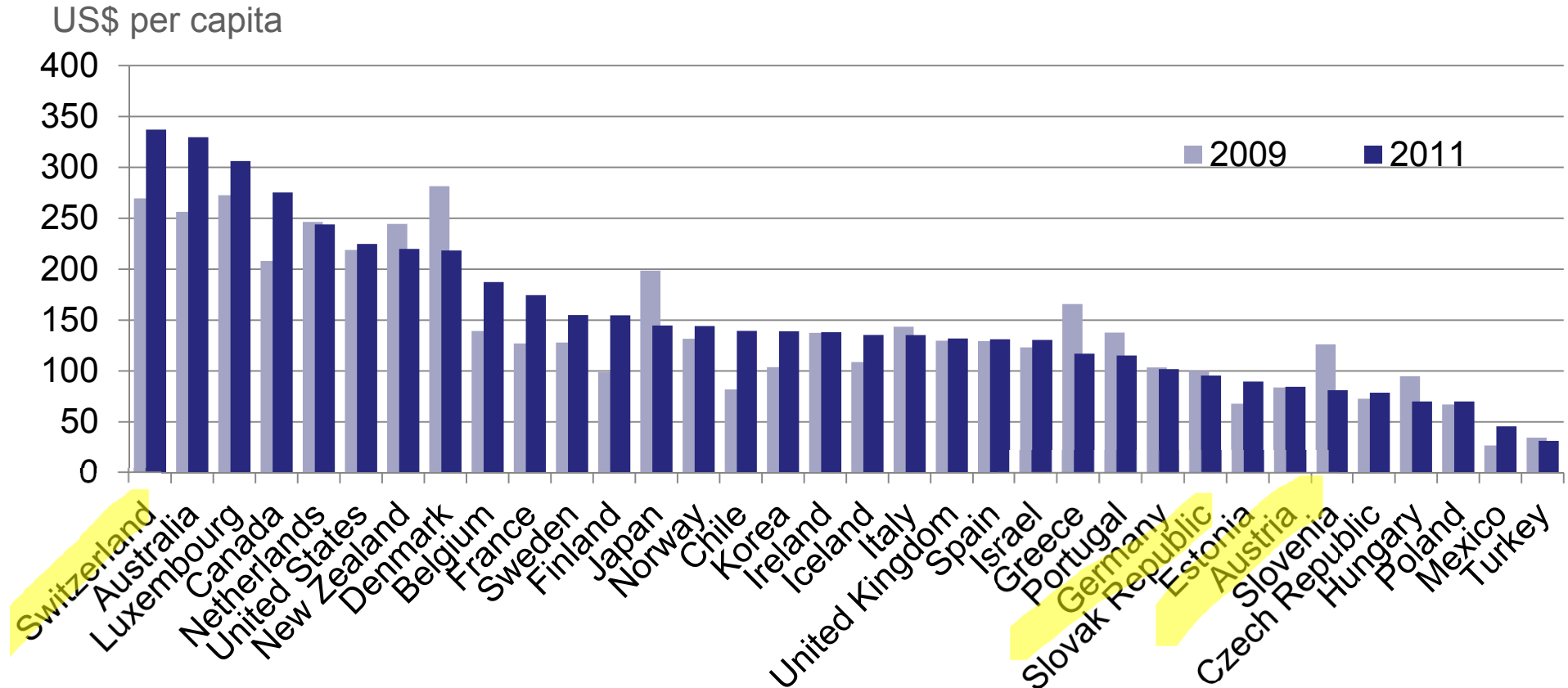
Source: OECD

→ Switzerland among the leaders



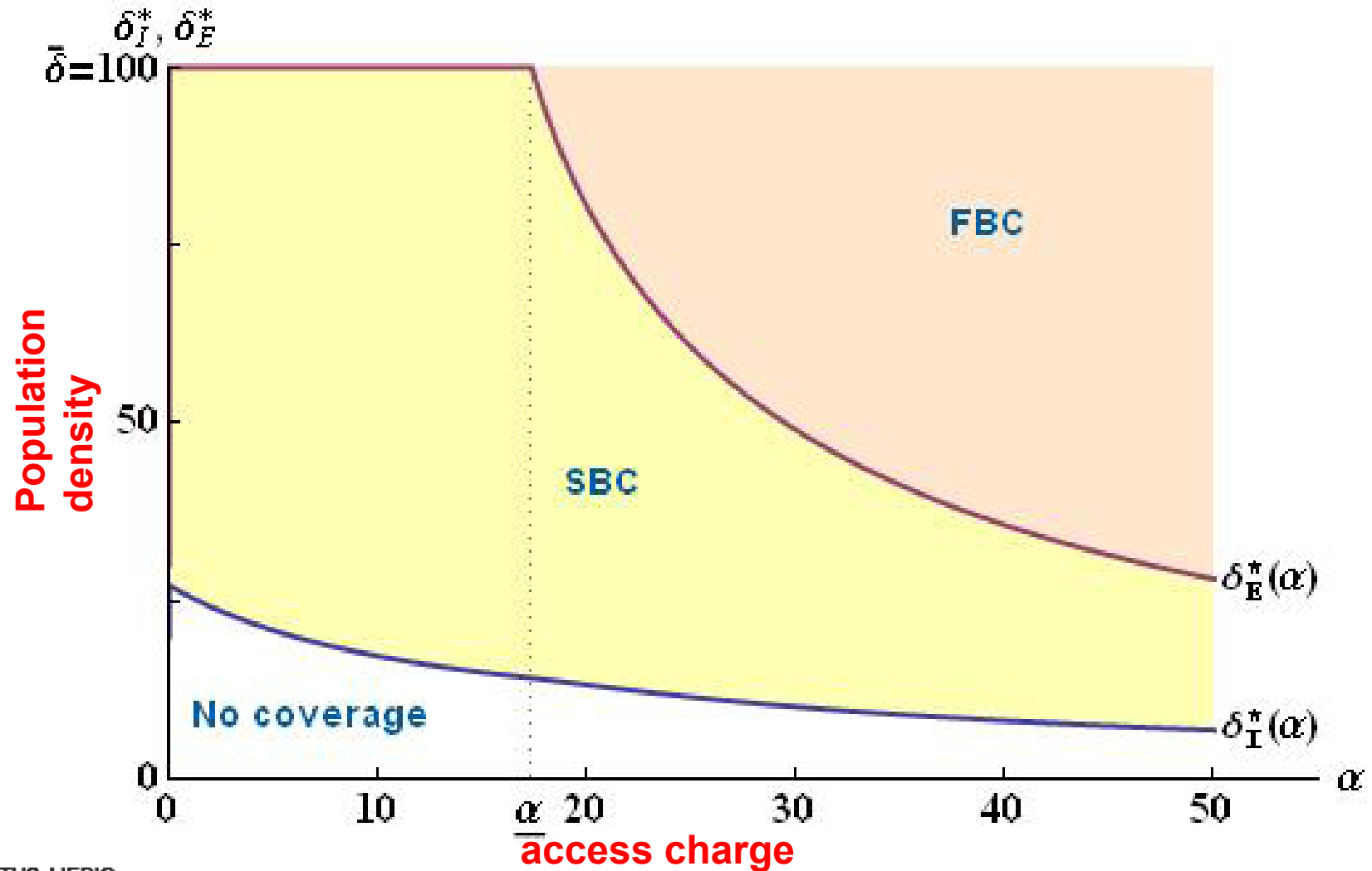
# Public telecommunications investment per capita

OECD countries

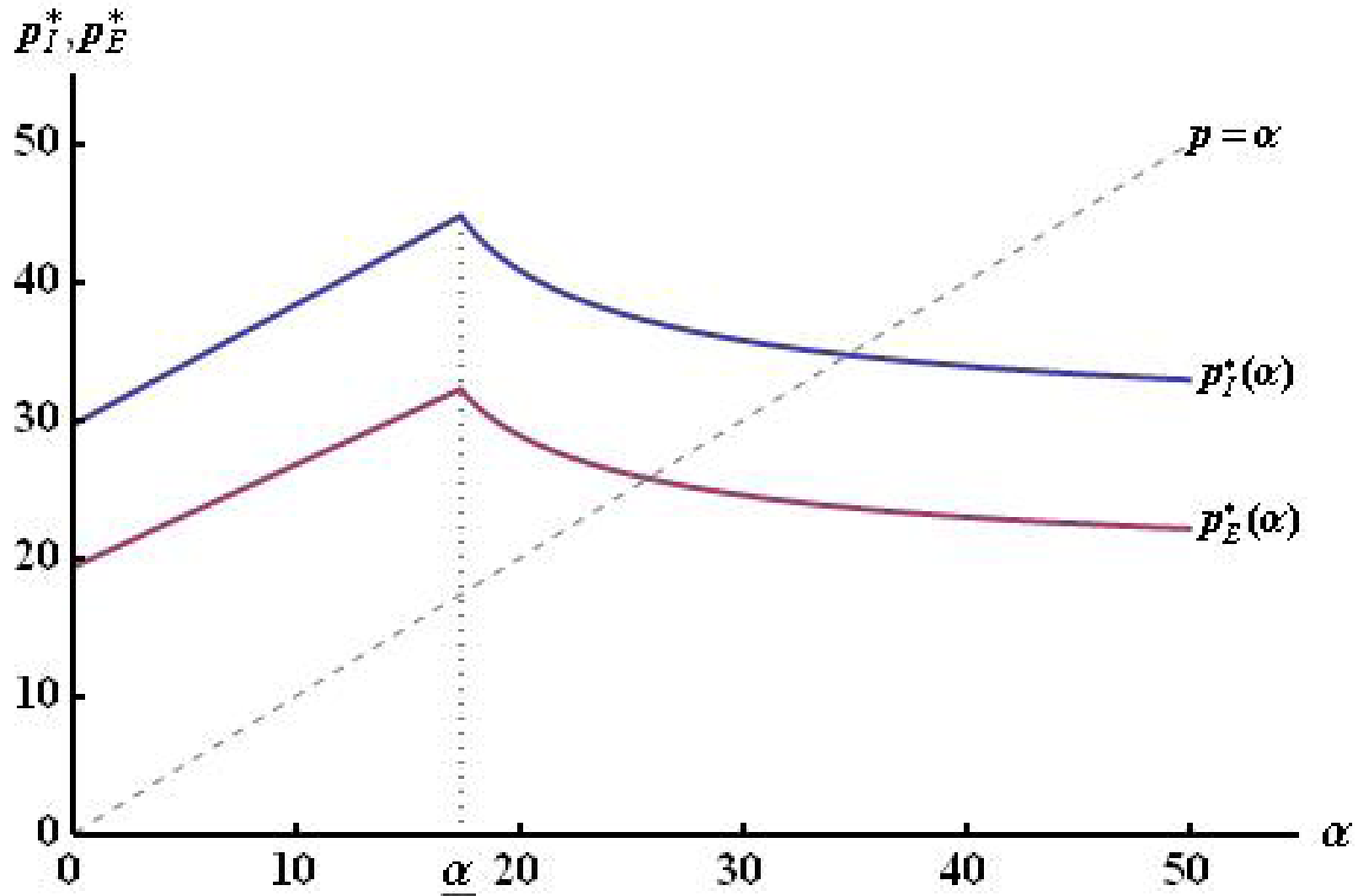


→ Investments are “higher” in countries with facilities-based competition

# Facilities-based vs. service-based competition as a function of the access charge



# High access charges lead to low retail prices: Static and dynamic efficiency reconciled!



# Legacy networks and regulatory commitment

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- Legacy network and the incentive to invest in NGA
  - ⇒ Arrow (1962) rather than Schumpeter: Monopolist's /incumbent's incentive diminished by replacement effect
  - ⇒ Suggestions: Reduce access charges/rental rates for legacy network
    - Bourreau, Marc, Cambini, Carlo and Dogan, Pinar, Access Pricing, Competition, and Incentives to Migrate from 'Old' to 'New' Technology (IJIO, 2012).
- Regulatory commitment/credibility and investment incentives
  - “Expropriate” once, but you never “expropriate” twice?

# Legacy networks, competition, and subsidies

## Preemption vs. waiting

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- Arguments against low incentive to invest of incumbent owning legacy network
- Preemption game: Race to be the first to invest
  - to be the single supplier in regions where two are not viable
  - to attract customers with high willingness to pay (switching cost)
- Problem of possible subsidies: Waiting game! Due to “low” profitability of investment (in small regions) incentive to wait.
- Free rider problem of consumers!

# Market evolution, consolidation, and the Telecoms Single Market

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- Beneficial effect of reduction of red tape obvious
- Consolidation: View between EC and industry differs
  - Within national markets vs. pan-EU
- Does EC destroy incentives for pan-EU investments and consolidation?
  - ⇒ Roaming and termination regulations: better buy than build
- Germany: Antitrust authorities:
  - Merger between two regional cable „monopolists“ Unitymedia and KabelBW blocked?
  - Merger between Vodafone and cable co KDG approved

# Conclusions

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- “*The industry is obviously no longer a natural monopoly and **wherever there is effective competition**—typically and most powerfully, between competing platforms—land-line telephony, cable and wireless— **regulation** of the historical variety **is both unnecessary and likely to be anticompetitive**” (Kahn 2007, p. 1).*
- Contrast result of recent regulation
  - ⇒ “**Investment holidays**” rather than **regulatory holidays**
- Bold steps needed:
  - Structural remedy rather than “smart new regulation”
  - ⇒ Ex-post competition policy rather than ex-ante sector regulation

# Conclusions

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- Benefit of doubt and trust in the competitive process:
  - Safeguards (ex-post competition policy) are sufficient
- Governmental role in high-speed internet access
  - Subsidies?
    - ⇒ Rent seeking both on supply and demand side
    - ⇒ Consumers get used to “Internet for free”
    - ⇒ Adverse effect on willingness to pay
  - Similar for public provision
  - Public funds are scarce
- Investment and innovations will come



# Literature

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- [Coexistence of service- and facility-based competition: The relevance of access prices for "make-or-buy"-decisions](#), Christian Bender and Georg Götz, [MAGKS](#) Discussion Paper No. 07-2011, February 2011.
- [How to provide access to next generation networks? The effect of risk allocation on investment and cooperation incentives](#), Christian Bender, [MAGKS](#) Discussion Paper No. 49-2011, Dezember 2011.
- [Competition, Regulation, and Broadband Access to the Internet](#), Georg Götz, [Telecommunications Policy](#), Volume 37, Issue 11, December 2013, Pages 1095–1109.
- [Effective Competition: Its Importance and Relevance for Network Industries](#), Christian Bender, Georg Götz & Benjamin Pakula in: Intereconomics, Vol.46 (1), Januar 2011.
- [Investitionen und Regulierung bei schnellen Internetzugängen in Deutschland und der Schweiz](#). Georg Götz und Patrick Zenhäusern ([Polynomics](#)), [Wirtschaftsdienst](#), Heft 4, 2013, S.260-266.
- [Schnelles Internet und weiße Flecken? Die Rolle von Staat und Regulatoren](#), Christian Bender und Georg Götz in: Wirtschaftsdienst, Vol. 91 (1), Januar 2011, S. 42-48.
- Die neuen Rahmenbedingungen für Investitionen in die Kommunikationsinfrastruktur. Nikolaus Forgó, Georg Götz und Gerald Otto (5/2010) in "medien und recht- Zeitschrift für Medien- und Kommunikationsrecht"