



Diffusion of ICT innovations in the Information Society: case Broadband in Finland

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- Policy Intervention: Theory
- Diffusion Case: BB in Finland

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Content



- 1st lecture: Adoption and Diffusion of ICT Innovations
 - Introduction to the lectures
 - Participants will learn the basic concepts and theories related to the Innovation Diffusion Theory (IDT) and to relate these to the ICT field
- 2nd lecture: Diffusion of ICT innovations in the Information Society: case Broadband in Finland
 - Participants will be informed on the case of broadband diffusion in Finland



Diffusion Case: BB in Finland

- Policy Intervention: Theory
- Diffusion of Broadband: Case Finland and Finland vs. Sweden



Policy Intervention: Theory

Reasons for Policy Intervention



- 'Market failure':
 - The markets do not manage to provide a 'social optimum'
 - Reasons are e.g. (network) externalities and equity aims

- 1. Externalities
 - Policy actions often support externalities
 - 'Traditional' and 'Network' externalities

- 2. Equity
 - All have to have equal right to basic services (USO)
 - The 'digital divide' separates users from non-users

Externalities



- (Traditional) externality
 - The consumption of one consumer affects directly the utility of another consumer

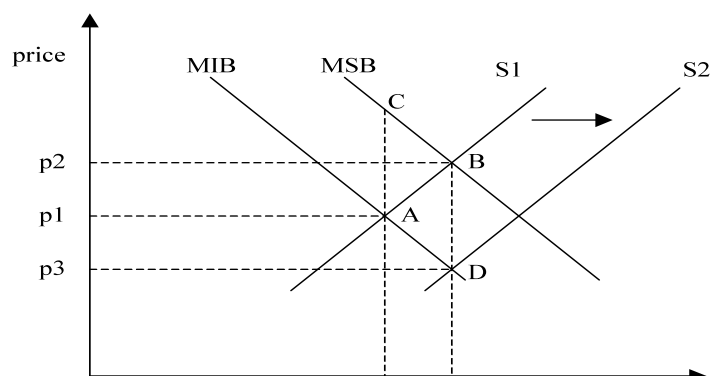
- Network externality (effect)
 - The utility of a consumer depends on the amount (or identity) of other consumers of the product
 - Telephone: if no one else had a phone, buying one would not be beneficial

- Indirect network externalities
 - The case of complement products
 - The demand of movies depends on the amount of players and the demand of players depends on the amount of movies available

Market "repairing" actions

- Demand side focus
 - the motivation and skills of consumers, and the content of services
- Supply side focus
 - subsidy of supplier costs by e.g. tax funds or cross subsidies (and forced requirements)

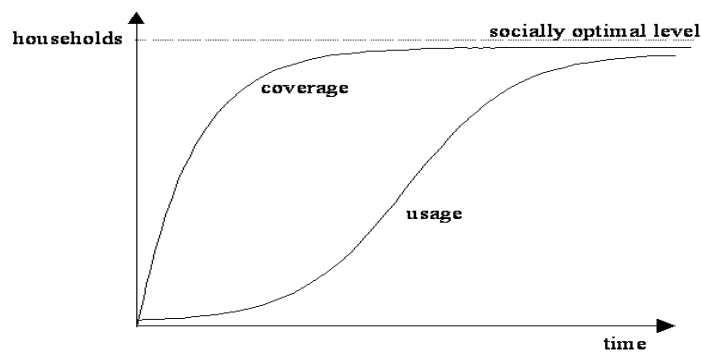
"Repairing" the Market



Dynamic availability and diffusion of a technology innovation



- Repairing actions are based on static situations – but would time repair the market failure (fast enough)?



Chicken-Egg –problem (Varian 2002, Gupta et al. 1999)



- Example: DVD-industry
 - Consumer electronics firms did not want to produce players before they were sure that enough content would be available
 - Content providers did not want to produce content before they would know DVD-players would be broadly available
- Diffusion needs new demand and supply of devices and content (indirect network effects)
 - Sony and Philips licensed the technology at attractive prices: They understood that competition was needed to keep the prices down and give a kick-start to the diffusion



Diffusion of Broadband: Case Finland and Finland vs. Sweden

Broadband (BB)

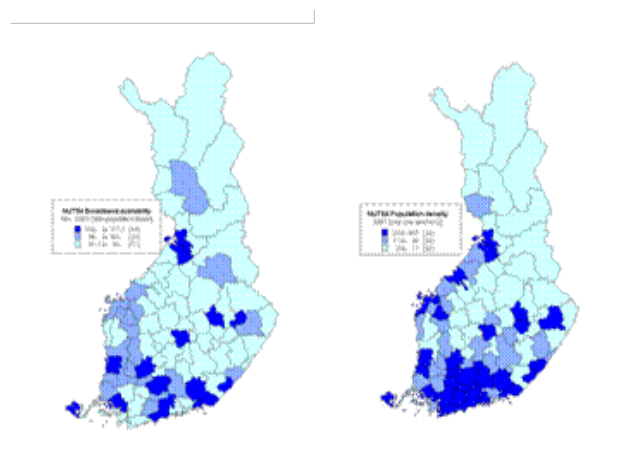


- BB = high data transfer speed (>256kb/s) and fixed (monthly) pricing
 - Fixed: xDSL, cable modem, optic fibre etc.
 - Mobile: 3G, @450, Wimax etc.
- BB diffusion is an established Information Society indicator
 - Seen as a basic infrastructure of the information society
 - Fast ICT connections are seen as a prerequisite in e.g. the Finnish information society strategy

Finnish BB strategy 'Broadband for all'

- Strategy (2003):
 - Concern that some are left outside of BB networks
 - Public subsidy was demanded by many - strategy: no subsidies
 - Themes: fostering competition, services and content, increasing BB demand and special actions in regions with not enough BB demand
- Broadband action plan (2008) 'all citizens have possibility to use IS services not depending on their location'
 - End of 2010: 1 Mbit/s
 - End of 2015: 100 Mbit/s (99% of residences within 2km)
 - 95% estimated to occur without subsidies, rest estimated to cost 200 million euros of which max. 67% publicly funded

BB availability and population density in 2001



Possible actions for increasing BB availability

(repairing market failure)



1. Organizing demand
 - Policy actions that strengthen demand
 - Internet-education, aggregation of demand

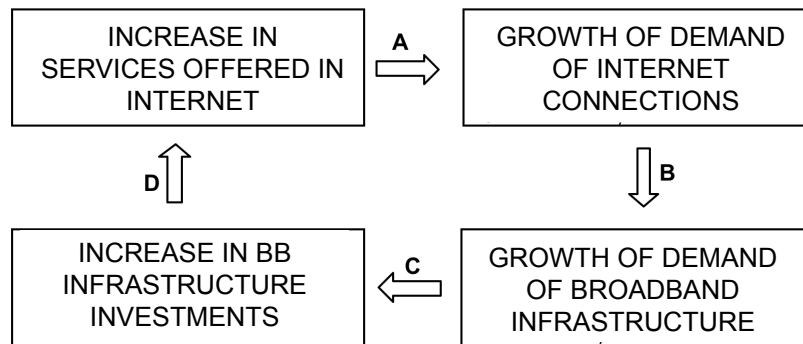
2. Affecting supply
 - Coverage requirements for infrastructure
 - Direct subsidy for infrastructure

Supply side: Subsidies



- Traditionally teleoperators were given monopolies and set with coverage requirements
 - The operator was able to cross-subsidise non-profitable rural regions
 - In a competitive situation (as in BB) it is not economically feasible to set coverage requirements to one or all operators
- BB strategy (2003): make markets more competitive
- New action plan (2008): cross-subsidy allowed in the @450 network and investment subsidies
 - Coverage requirement: 99.9% at the end of year 2010

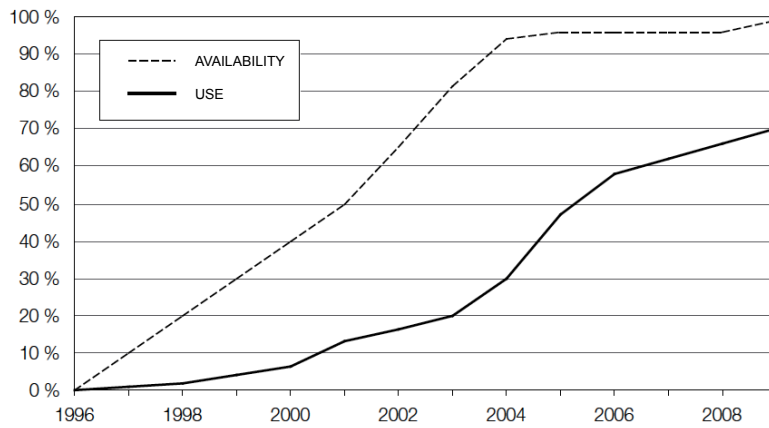
Virtuous circle of BB investments (chicken-egg)



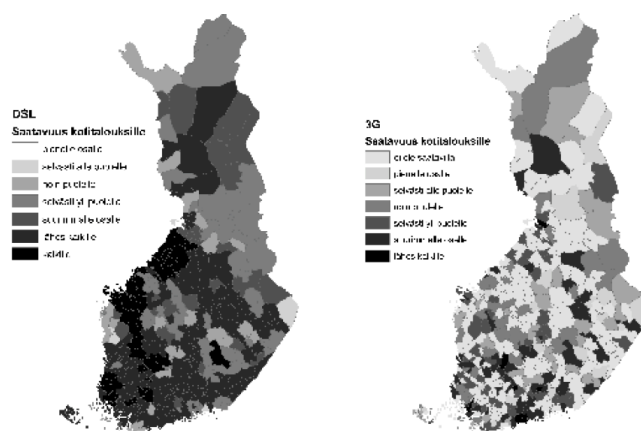
Diffusion of BB in Finland

- Availability was high early and has been increasing since:
 - 2002 - 65%; 2003 - 82%; 2004 - 94%; 2008 - 96%; **2009 - 99%**
- Use has been increasing following the diffusion theory, first slowly but with an increasing pace:
 - 2002 - 10%; 2003 - 13%; 2004 - 25%; 2005 - 40%; 2006 - 53%; 2007 - 62%; **2009 - 70%**
- www.laajakaistainfo.fi / Statistics Finland / Finnish Ministry of Transport and Communications

Availability and Diffusion of BB in Finland



Availability of DSL and 3G



BB strategies of Finland and Sweden



- Have a traditionally good telecoverage although suffer from sparsely populated regions
- Aims similar, both want to build an information society for all and to be forerunners
- Different telehistories: local operators in Finland, state monopoly in Sweden

Finland

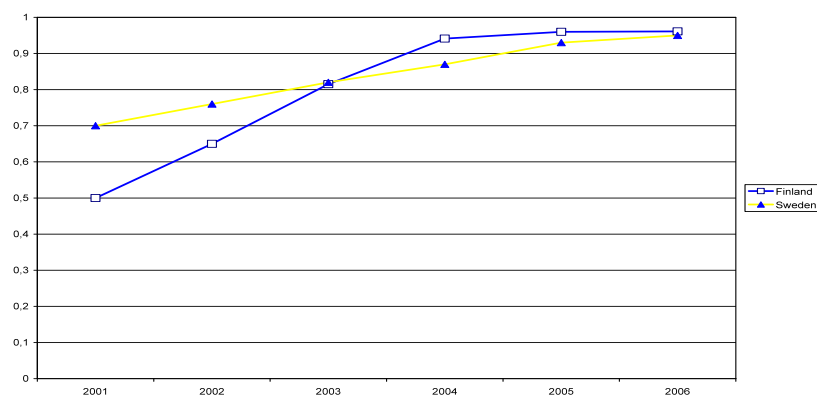


- Competition policy focus on increasing local competition
- No statewide telemonopoly, but several local operators
- Although there are more operators than in Sweden, prices seem to have been higher
- BB strategy proposal (2003) is in line with previous telepolicy:
 - Relies on market forces and is technology neutral

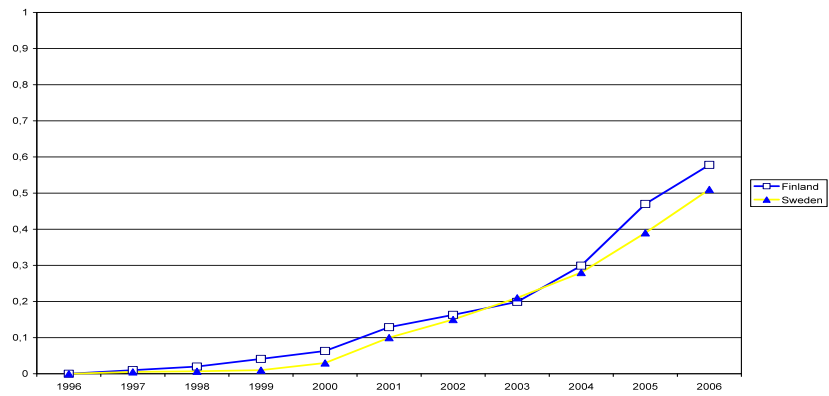
Sweden

- Probably the first country with a BB strategy (2000)
- The society has taken an active role:
 - Government "is responsible" for BB
 - Fibre the preferred technology
 - Public infrastructure investments create economic and social success
- Parallel fibre backbone network to the state owned Telia monopoly network
- Public support to municipalities for building local BB networks

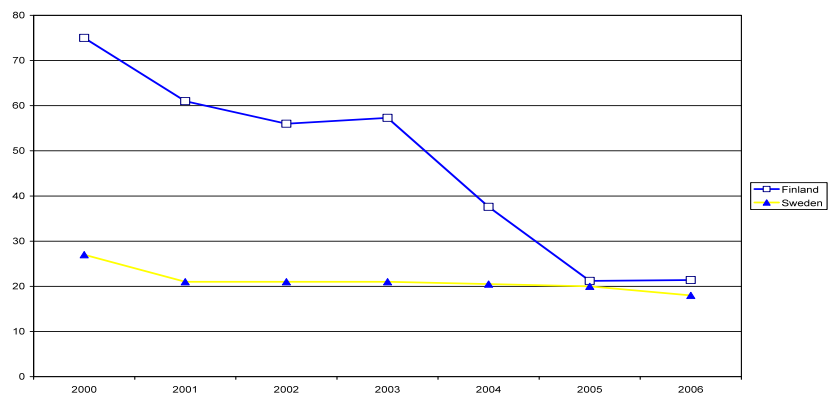
BB availability



BB diffusion



BB prices



Comparison of strategies



- Although the strategies seem different, the practical differences are not big:
 - Both try to create a good competitive environment
 - In Finland public support has been given to some extent by local authorities
 - The fibre focused strategy is not yet that different since the near future of BB is DSL
- Subsidizing investments vs. increasing competition (opening networks or building new)

Summary: BB Finland vs Sweden



- Finland and Sweden are scarcely populated countries with high telecoverage
- Different strategies for BB have been chosen, but both countries are fixing "market failure"
 - Differences due to telehistory, market structure and policy traditions
- However, the improvement of BB coverage follows the same practical means:
 - Subsidizing investments and increasing competition
- Who should pay for better availability: tax payers or BB users?
 - Swedish model vs. Finnish model
 - Is BB an universal service?

Summary



- ICT diffusion is one part in measuring the state of Information Society
- The public authorities tend to try to fix market failure in the diffusion of ICT
 - Means: standardization, increasing competition, public investment subsidies, consumer education, technology destruction
- Case example:
 - Broadband – increasing competition and public subsidies, consumer education

Additional reading



Eskelinen, H., Frank, L., Hirvonen, T. (2008): Does Strategy Matter? A Comparison of Broadband Rollout Policies in Finland and Sweden. Telecommunications Policy, vol 32, no 6, 412-421.