

Diffusion of innovations in mobile communications

Anders Bohlin

Harald Gruber

Pantelis Koutroumpis

Outline

- Rationale for study
- Background on mobile telecommunications industry
 - Technology
 - Regulation
- Diffusion model
- Empirical results
- Conclusions and suggestions for future work

Rationale for study

- Diffusion of overall mobile telecommunications is well studied, but refers to the total market
- Little study of diffusion of generations of mobile technologies, in particular 3G
- Research questions:
 - What drives innovation within the sector?
 - What are the feedback effects, if any?

Sector overview on mobile telecommunications

- Astonishing success story: within 20 years outpaced fixed line technology in terms of subscribers. Particularly strong impact on developing countries.
- Main growth drivers:
 - Technological innovation in microelectronics. Innovations come in predictable manner(Moore's Law)
 - Regulation: advent of competition in infrastructures

Status of economic research

- Sizeable impact on economic welfare (Hausmann, 1997)
- Drivers of diffusion
 - Competition
 - Standardisation
 - GDP
- Questions about diminishing returns of benefits from market entry

Modelling approach

- Diffusion model
- Model generations of technology (2G, 3G)
- Set of structural, regulatory and socioeconomic variables as explanatory variables
- Various regression models, including fixed effects and instrumental variables
- Worldwide data set

Results

- 3G
 - Location parameter: Urbanisation, GDP/pop, broadband adoption, regulation all positive ; diffusion speed of 2G negative effect
 - Diffusion speed: more competition among firms has positive effect ; competition among technologies unclear effect
- 2G
 - Location parameter: Urbanisation, GDP/pop, internet adoption, regulation all positive ; diffusion speed of 3G unclear effect
 - Diffusion speed: more competition among firms has positive effect ; competition among technologies negative effect

Conclusion

- Drilling deeper into diffusion of mobile technology generations is illuminating exercise.
- Drives of innovations across technologies are not homogenous.
- Indications that 3G has limited diffusion because of competition from 2G (technology push hypothesis)
- More work could be done on regional effects, using regional sample of countries.