Privacy Protection and Technology Diffusion: The Case of Electronic Medical Records
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Overview

• Interesting and important problem
  – Slow diffusion of ICT frequently pointed to as one reason for high medical cost
  – Innovation policy perspective - technological innovation in health care is usually cost-increasing rather than cost-reducing, but this technology is an exception

• Paper - diffusion of interoperable EMR is slower when states have privacy laws
  – Use of placebo technology is especially persuasive

• Slides go further and compute an example of the foregone benefits and compare to costs
Comments

• What’s missing from paper?
  – a framework or model, with perhaps a fuller discussion of the determinants of diffusion
  – The cost-benefit computation

• Some suggestions for future research
  – Technological solutions?
Usual modeling framework

• Heterogeneous adopters
  – Benefits have a unimodal distribution
  – Costs decline monotonically over time
  – Adopt when benefit>cost

• Epidemics (spread of information)
  – Small share adopt
  – They encounter the remainder randomly; those contacted adopt
  – Implies 3-parameter logistic

Both => s-shaped curve for diffusion

Geroski 2001 - survey
Sunk cost models

• Adoption as investment under uncertainty
  – Compares an upfront cost with a stream of future benefits
• => by and large, an absorbing state in the sense that once costs incurred, they are sunk
• Decision is
  – not “adopt or do not adopt”
  – instead “adopt now or wait to decide later”
• Therefore real options models might be appropriate (Stoneman 2001)
Economic determinants

• Model ingredients:
  – Benefits
  – Costs
  – Uncertainty/information
  – Environment
Benefits

• Complicated - as in health care more broadly, not clear whether decision-maker/payer coincides with the beneficiary

• Networks and standards
  – Externalities more important if hospitals can share information (patient approval?)
  – Proxy by installed base

• Learning and experience? – proxies?

• Closeness of substitute technologies
Costs

• Factors proxied by time dummies
  – Cost of finance
  – Price
    – how has this changed over time?
• Factors that vary across units:
  – Complementary investments, incl. training
    • Does this vary by hospital (e.g., prior ICT adoption)
    • Age of doctors
  – Scale
    • fixed cost nature of adoption in many cases
    • Hard to tell here, given inclusion of both payroll and staffed beds (were they logged?)
Environment – market structure

Size and/or market power

• Accelerates diffusion
  – Scale economies
  – Sponsoring a standard (e.g., IBM and the personal computer)

• Delays diffusion
  – Slower and less flexible
  – Less fear of market share loss to entry (see ATT in 1960s)

• Can we learn anything about this using these data?
Environment - regulatory

• Accelerates adoption
  – mandates pollution or safety standards
  – solves coordination problems in network industries

• Delays adoption
  – Safety regulation, e.g., new pharmaceuticals and medical instruments
  – Standard-setting process – e.g., Hi-def DVDs
  – Privacy protection
Suggestions

• Hazard models instead of probits?
• Changes in law – can we see evidence of sunk costs?
  – 4 states increase protection
  – 15 reduce it