Health provider networks, quality and costs

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Outline

motivation

- Dutch ministry of health is trying to "stimulate" selective contracting
  - insurers contract selectively to exclude inefficient health care providers
    - high costs and/or low quality
  - when buying insurance, consumers cannot observe provider quality and costs
    - need to be "guided" by their insurer
- selective contracting also popular in the US to reduce health care costs

motivation (cont.)

- but some people worry about effect on quality
  - insurers contract cheap low quality providers (LA Times, Sept. 2013, NYT July 2014)

  We are nervous about these narrow networks. It was all about price. But at what cost in terms of quality?

- question: do insurers (only) exclude socially inefficient providers?

what we know

- selective contracting helps to reduce costs (Dranove et al. 1993, Dranove 2000, Chernew and Newhouse 2011)
  - exclude expensive providers that insured patients would visit
- effect on quality not clear
  - insured is interested in quality; provider choice can help
  - evidence is mixed (Cutler 2004, Porter and Teisberg 2006, Zwanziger et al. 2000)

framework

- two providers
- provider i provides welfare $q_i - c_i$
  - today: $q_i \in \{q^h, q^l\}$ and $c_i \in \{c^h, c^l\}$
- insurer(s) and providers observe q_i, c_i
- when buying insurance, consumers cannot observe q_i, c_i
- timing
  1. providers simultaneously offer (menus of) contracts to insurer(s)
  2. insurer(s) accept/reject offers
  3. insurer(s) offer (simultaneously) insurance policy = network+premium
  4. consumer buys insurance and uses care

framework (cont.)

- full insurance: patient does not care about c_i
- patient falls ill once (for sure) and uses care
- patient chooses highest quality provider from network
  - primary physician
  - word of mouth
- can insurer signal quality through selective contracting?

framework (cont.)

- we want patient to be treated by $\max_i \{q_i - c_i\}$
- **insurer critical** configuration: $q_1 - c_1 > q_2 - c_2$ but $c_1 > c_2$
  - if insurer chooses, inefficient outcome: quality too low
  - selective contracting focuses on costs
- **patient critical** configuartion: $q_1 > q_2$ but $q_1 - c_1 < q_2 - c_2$
  - if patient chooses, inefficient outcome: costs too high
- we need common outcome in former and exclusive outcome in latter case
- is this possible in equilibrium?

summary

- selective contracting signals focus on costs
- high quality can only be signalled with common contracts
- monopoly insurer is efficient if cost difference is small compared to quality difference
- always exists efficient equilibrium with insurer competition
- results still true if cost and quality endogenous

insurance monopoly I: what signals what?

- exclusive contract cannot signal high quality (in efficient equilibrium)
  - insurer-critical configuration ($q_1 - c_1 > q_2 - c_2$ and $c_1 > c_2$)
    - suppose quality of exclusive (q^E) is higher than quality common contract (q^C)
    - incentive to deviate to inefficient provider
- common contract may signal quality
  - insurer-critical configuration ($q_1 - c_1 > q_2 - c_2$ and $c_1 > c_2$)
    - common contract efficient
    - deviation to exclusive contract (with low cost provider) might lead to low expected quality
    - lower willingness to pay
    - deviation might be deterred!

insurance monopoly II

Proposition (insurance monopoly)

With a monopoly insurer an efficient equilibrium exists if and only if

$$q^h - q^l \geq \left(1 + \frac{2f(q^h, c^h, q^l, c^l)}{\sum_{x,y \in \{c^h, c^l\}} f(q^l, x, q^l, y)}\right)(c^h - c^l).$$

- efficiency not always possible
  - in (q^h, c^h, q^h, c^l) efficiency requires exclusive contract
    - $q^E > q^l$ in efficient equilibrium
  - insurer-critical configuration (q^h, c^h, q^l, c^l) and consider inefficient deviation to low cost provider
    - private and social gain: $c^h - c^l$
    - private penalty $= q^C - q^E < q^h - q^l =$ social disutility

insurance duopoly I

Proposition (insurance duopoly)

With an insurance duopoly, an efficient equilibrium exists.

- what changes in insurer-critical configuration (q^h, c^h, q^l, c^l)?
  - in efficient equilibrium both insurers offer common contract
  - if one insurer deviates, consumers realize and adjust beliefs (q^l for deviating insurer's provider)

insurance duopoly II

Proposition (duopoly: mode of competition)

There exist inefficient equilibria that yield higher industry profits (but lower welfare).

- efficient equilibrium: harsh Bertrand style competition
- mode of competition matters!

dynamics: monopoly

- suppose providers can invest to raise quality from q^l to q^h
- assume that an efficient (static) equilibrium exists
- with monopoly insurer there is under-investment in quality:
  - appropriability effect: consumer valuation goes up with $q^C - q^E < q^h - q^l$
  - signalling profit: low quality provider in C outcome does not treat anyone, but still earns a signalling profit
- in an equilibrium with only E, no incentive to raise quality

dynamics: competition

- with insurer competition there is an equilibrium which is efficient both from a static and a dynamic point of view
  - appropriability effect disappears: difference in consumer expectation between C and E equals $q^h - q^l$
  - signalling profit is competed down to 0

selective contracting: policy implications

- there are multiple equilibria of the contracting game
- equilibrium played depends on insured's expectations of q^E, q^C
- when $q^C - q^E$ is big, networks can be too big
  - inefficiency in patient critical configuration
- "stimulating" selective contracting can be welfare enhancing
  - government should explain to insured that q^E can be high
- multiple equilibria also explain shifts in contracting in the US
  - indemnity insurance with wide networks; aggressive selective contracting with narrow networks; managed care backlash

selective contracting desirable?

- stimulating selective contracting is welfare enhancing if:
  - either quality and costs negatively correlated
  - insurer critical configuration unlikely
    - well run hospitals have high quality and low costs
    - high quality implies that it is less likely that patient needs to come back (hence, low costs)
  - or medical arms race: high quality implies low surplus $q - c$
  - patient critical configuration likely
- stimulating selective contracting tends to reduce quality and welfare if:
  - quality and costs positively correlated
  - quality has its cost
    - good staff is more expensive
    - latest equipment
  - insurer critical configuration likely

conclusion

- we provide a framework to analyze selective contracting in the health insurance sector
- efficiency can be achieved if there is enough competition
  - insurance duopoly vs. monopoly
  - mode of competition
- exclusive contract signals low quality (cost focus)
- common contracts signal high quality

literature

- theory on selective contracting/managed care
  - focus on effects on prices, treatments, adverse selection, not on quality
  - Cutler et al. (2000), Ma and McGuire (2002), McGuire (2011), Bardey and Rochet (2010)
- I.O. literature on exclusive contracts
  - Rey and Tirole (2007) overview
  - we follow Bernheim and Whinston (1998)
    - always exists equilibrium in exclusive contracts
    - equilibrium in common contracts exists only if industry profits with common contracts exceeds profits with exclusive contracts