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Health insurance and imperfect competition in the health care market

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Abstract

We show that when health care providers have market power and engage in Cournot competition, a competitive upstream health insurance market results in over-insurance and over-priced health care. Even though consumers and firms anticipate the price interactions between these two markets – the price set in one market affects the demand expressed in the other – Pareto improvements are possible. The results suggest a beneficial role for Government intervention, either in the insurance or the health care market.

JEL classification: I11

Keywords: Health insurance; Health care markets; Health care finance

1. Introduction

This paper considers the interplay between the insurance and health care markets. Feldstein (1970) was the first to note that widespread health insurance leads to increases in the price of health care, which in turn undermines the value of insurance. He conjectured that if "insurance coverage were reduced, the utility loss from increased risk would be more than outweighed by the gain due to lower prices" (p. 251). It was left to Chiu (1997) to demonstrate formally how this possibility might occur. Chiu considers the case of completely inelastic supply of health care, so that health care consumption is fixed. In this case, health care price inflation completely destroys the value of any coinsurance subsidy. However, there is little empirical support for the extreme inelasticity of health care supply required for the Feldstein–Chiu result.

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Our analysis generates the same conclusion, but under the more plausible assumption of Cournot pricing in the health care market. Like Chiu, we assume a competitive insurance industry. Both markets equilibrate *simultaneously*, as the price of health care affects the demand for insurance, and conversely, insurance coverage affects the Cournot equilibrium price of health care. Participants in each market take the price set in the other as given, in the manner of Nash equilibrium. Price expectations are rational (i.e., confirmed in equilibrium). Market power in the health care market is shown to be exacerbated by the feedback into insurance demand, leading to high health care prices and excessive insurance coverage. Consumers would be better off by *collectively* reducing their level of coverage, since the resulting reduction in health care price more than off-sets the increase in risk, exactly as predicted by Feldstein.

The reason that the competitive insurance market fails in the face of health care supplier market power is that individual insurers do not take account of the reactions of health care suppliers to their action.

Two related papers are Gaynor et al. (2000) and Wigger and Anlauf (2001). Gaynor et al. assume *exogenous* pricing of health care, and show that lower prices improve consumer welfare, after taking into account the insurance market response. However, as they do not endogenize health care prices, Gaynor, Haas-Wilson and Vogt cannot address the question of how exogenous reductions in coinsurance rates affect consumer welfare. Wigger and Anlauf do extend the Gaynor, Haas-Wilson paper and derive a special case of our result, with a monopoly provider and more restrictions on the utility function. We generalise these papers by considering consumer welfare under Cournot competition (with monopoly as a special case).

2. The competitive insurance market

Consider a market with M potential consumers of health care. All consumers are ex ante identical and face two possible states – *healthy* and *ill* – with a probability TT of falling ill. A consumer's wealth, W, is the same in each state, but utility is state-dependent. Healthy consumers have direct utility $u(C)$, derived entirely from the consumption, C, of a composite good that serves as numeraire. When ill, the consumer has utility function $v(C, h)$, with h denoting health care consumption, which is priced at p.[1] We make the following Assumptions about utility-when-ill:

Assumption 1. $v(C, h) = u(C + g(h))$, with $u' > 0$, $u'' < 0$, $g \leq 0$, $g' \geq 0$ and $g'' \leq 0$. Moreover, there exists $\bar{h} > 0$ such that $g'(h) > 0$ and $g''(h) < 0$ for all $h < \bar{h}$, and $g(\bar{h}) = 0$ and $g(h) = 0$ for all $h \geq \bar{h}$.

Assumption 2. For each $h > 0$:

$$g'''(h) < \frac{|g''(h)|}{h}$$

Assumption 1 is similar to the utility specification of Ma and McGuire (1997) and Gaynor et al. (2000). Illness imposes a shock $g(0)$ which can be recovered through the consumption of health care at a rate given by the concave health production function g. It simplifies our model in two respects. First, since utility-when-ill is a monotone transformation of a quasi-linear function, ex post income effects are absent from health care demand. Second, when health care is free ($p = 0$), Assumption 1 implies that utility is no longer state-dependent (since $g(h) = 0$ for all $h \geq \bar{h}$). Neither

[1] We endogenize p in the following section.