



Health insurance as a two-part pricing contract[☆]

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ARTICLE INFO

Article history:

Received 23 November 2011
Received in revised form 5 March 2013
Accepted 8 March 2013
Available online 27 March 2013

Keywords:

Market power
Health insurance

ABSTRACT

Monopolies appear throughout health care. We show that health insurance operates like a conventional two-part pricing contract that allows monopolists to extract profits without inefficiently constraining quantity. When insurers are free to offer a range of insurance contracts to different consumer types, health insurance markets perfectly eliminate deadweight losses from upstream health care monopolies. Frictions limiting the sorting of different consumer types into different insurance contracts restore some of these upstream monopoly losses, which manifest as higher rates of uninsurance, rather than as restrictions in quantity utilized by insured consumers. Empirical analysis of pharmaceutical patent expiration supports the prediction that heavily insured markets experience little or no efficiency loss under monopoly, while less insured markets exhibit behavior more consistent with the standard theory of monopoly.

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1. Introduction

Fully insured patients face health care that is free at the margin. This leads to over-consumption of costly health care resources. As a result of this “moral hazard,” optimal health insurance contracts balance the need for insurance against the need for more efficient utilization incentives (Arrow, 1963; Pauly, 1968; Zeckhauser, 1970). This balance explains why health insurance contracts often charge an ex post unit price or co-payment, in addition to an upfront premium. Co-payments reduce the degree of insurance, but in return limit the extent of over-consumption, because the consumer faces an out-of-pocket price that partially reflects social cost.

Much attention has been paid to the optimal design of these “two-part” health insurance contracts that charge a premium and an ex post co-payment. The emphasis has been on how to manage moral hazard and other insurance market failures like adverse selection. However, two-part health insurance contracts might have another

function that is less appreciated: the reduction of deadweight loss from market power among health care providers.

Our central hypothesis is that health insurance resembles a two-part pricing contract in the sense that consumers pay an upfront fee (premiums) in exchange for lower unit prices (co-payments) in the event of illness. Outside the health insurance context, standard theory implies that two-part pricing contracts allow a monopolist to sell goods at marginal cost, but to extract consumer surplus in the form of an upfront payment (see the seminal paper by Oi, 1971). The standard normative prediction is that two part pricing contracts provide a monopolist the same incentives to minimize deadweight loss as a competitive market. Intuitively, deadweight loss-minimization by the monopolist maximizes the total consumer surplus available for the firm to extract in the form of an upfront payment.

An example illustrates the hypothetical analogy between health insurance and a two-part pricing contract. Imagine a monopolist that produces health care and provides health insurance. By setting its co-payment equal to marginal cost, this monopolist can ensure that consumers use care efficiently and thus derive the greatest possible gross consumer surplus from its use. The monopolist can then profit from this strategy by charging an upfront premium equal to this gross consumer surplus. Under this arrangement, consumers remain willing to participate in the health insurance market, utilization occurs at the efficient level where marginal cost equals marginal benefit to consumers, and the firm earns profits equal to gross consumer surplus. This is the usual logic through which two-part pricing generates maximum profits and first-best utilization.

Of course, it is not immediately obvious whether the logic in this simple example extends to the realities of the health care marketplace, which involves the interaction of disintegrated insurers and providers, heterogeneous consumers, and a wide range of information asymmetries.

[☆] For helpful comments and suggestions, we wish to thank Alan Garber, Marty Gaynor, Dana Goldman, Geoffrey Joyce, Mark Pauly, Tomas Philipson, Bob Town, Bill Vogt, participants in the NBER Summer Institute Health Economics Workshop, NBER Insurance Project, and NBER Health Care Program Meetings, seminar participants at the University of Illinois, Federal Trade Commission, Indiana University Purdue University at Indianapolis, the University of Maryland, and the University of Chicago. We also wish to thank the editor and two anonymous referees for many helpful suggestions. We are grateful to the National Institute on Aging for its support through the Roybal Center for Health Policy Simulation (P30AG024968) and grant number RC4AG039036.

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In this paper, we study the applicability of the two-part pricing hypothesis to health care and reach two primary conclusions:

- When different types of consumers can sort into different types of insurance contracts, health insurance markets perfectly eliminate deadweight loss from market power in health care provision. This logic is robust to moral hazard, adverse selection, the disintegration of providers and insurers, and two-sided market power for providers and insurers.
- When perfect sorting of consumers is not possible, deadweight loss from powerful health care providers creates uninsurance, but does not generate under-utilization of medical care by insured consumers.¹ Insurers forced to charge “pooled” uniform premiums to a diverse set of consumers may decide to sell to the highest-demand consumers only, and to price marginal consumers out of the insurance market entirely. However, even under this scenario, insurers still have incentives to encourage efficient utilization among the consumers who remain insured.

Our results have several implications for policymakers seeking to limit deadweight loss due to market power in health care. First, the extent and even presence of deadweight losses from health care monopoly are determined by the structure of the insurance market. For example, the extent of premium-discrimination in the health insurance market determines the degree of monopoly loss suffered in the hospital market, even when hospitals do not themselves sell insurance. Therefore, the decision to regulate or allow monopoly in health care provision should be informed by the structure of the health insurance market. Moreover, policies that expand insurance coverage or promote efficiency in the insurance market may be viewed as substitutes for regulating monopoly in health care provision.

Second, the price–cost margin for health care goods is an unreliable measure of welfare loss from monopoly power. When insurance is widespread and reasonably complete, providers may be receiving very high monopoly prices and profits, even though consumers are paying prices near or even below marginal cost. The copayment–cost margin is a similarly inconsistent measure of welfare loss from monopolies, as it is driven primarily by the extent of moral hazard and not by the monopoly power of upstream providers.

The two-part pricing view of health insurance leads to two testable empirical implications that differentiate it from alternative theories. First, eliminating health care monopolies in heavily insured markets will lead to little or no change in the quantity of health care consumed, because consumer copayments will be insensitive to market power among providers. In contrast, eliminating health care monopolies in largely uninsured markets will increase the quantity of health care used and reduce deadweight loss as prices fall from monopoly levels to marginal cost levels. Second, the two-part pricing theory uniquely implies that the absolute value of demand elasticities under monopoly may be greater than unity.

Empirical analysis of patent expiration in the pharmaceutical market provides evidence consistent with these positive predictions. The elimination of pharmaceutical patent monopoly has little to no impact on quantity consumed for molecules that are heavily insured, but substantial quantity impacts for molecules with less widespread insurance. In addition, demand elasticities in less-insured markets follow the predictions of standard monopoly models, while elasticities in heavily insured markets are consistent only with a two-part pricing interpretation.

The paper proceeds as follows. Section 2 develops the analogy between health insurance and the standard theory of two-part pricing, even when information is incomplete and market power imperfect. Section 3 presents our empirical analysis. Finally, Section 4 summarizes

¹ This point is complementary with the welfare analysis of monopsony power in health insurance (Pauly, 1988).

our conclusions and implications for the analysis of market power in health care.

2. Two-part health insurance and efficient surplus-extraction

For decades, many health economists cultivated and then relied upon the intuition that health care competition reduces welfare. According to this argument, healthcare monopolies improve welfare by offsetting excessive utilization due to moral hazard (Crew, 1969; Frech, 1996; Folland et al., 2001).

Gaynor et al., (2000) exposed the flaw in this reasoning: if private insurers could make customers better off by raising their out-of-pocket costs, and thus restricting utilization, they would surely do so. In their model a competitive insurance industry responds to higher prices for medical care by weakly increasing coinsurance or copayments, consequently restricting quantity purchased and reducing consumer welfare. Of course, this important insight leads one to ask whether and how profit-maximizing behavior by medical care providers mediates the effects of health insurance on deadweight loss. For purposes of their argument, Gaynor et al. treat health care prices, and medical care provider behavior, as exogenous. By incorporating provider behavior into the Gaynor et al. approach, we derive new conclusions about the positive and normative implications of market power on the provider side.

In our model just as in Gaynor et al., moral hazard does not transform market power into a boon for consumers. However, it does give rise to insurance contracts that equip profit-maximizing health care providers with a two-part pricing instrument. This leads to a novel implication. Gaynor et al. conclude that, “when the medical market is not competitive and already exhibits prices above marginal costs, price increases lead to lower welfare and price decreases lead to higher welfare.” In contrast, we conclude that price increases due to monopoly power are welfare-neutral among the segment of insured consumers, and that they only lead to welfare losses among consumers that are uninsured or become uninsured.

2.1. Economic environment

Following Gaynor et al., consumers face a risk of illness and an uncertain demand for a medical remedy, produced at constant marginal cost MC . An insurance contract is an offer of an ex post co-payment (m), and an ex ante premium I . There are consumers of measure one, indexed by $h \in [0,1]$, and distributed uniformly over this interval. Patients with lower values of h are sicker. The fraction σ of consumers falls sick. Sick consumers place value on the medical remedy, while healthy consumers do not.

Consumers do not know their value of h ex ante, but learn it ex post. Insurers, however, cannot observe this value and thus cannot make indemnity payments conditional on the underlying health state. Payments can only be contingent on the consumer’s observed decision to purchase the medical good or not. The necessity of tying payments to utilization, rather than the underlying source of risk, results in moral hazard, or over-utilization relative to the first-best, full information case. When insurance payments are tied to medical care use, patients are rewarded for consuming medical care. We will demonstrate that this stimulates excessive use.

2.2. The typical competitive problem

We begin by characterizing the standard competitive equilibrium allocation in the presence of moral hazard. Consider a representative competitive insurer purchasing medical care from a competitive goods market, and providing insurance within the informational structure outlined above.

The firm chooses a co-payment (m) and premium (I) that maximizes consumer utility, subject to a break-even constraint and incentive

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