

Optimal quality, waits and charges in health insurance[☆]

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Abstract

We examine the role of quality and waiting time in health insurance when there is ex post moral hazard. Quality and waiting time provide additional instruments to control demand and potentially can improve the trade-off between optimal risk bearing and optimal consumption of health care. We show that optimal quality is lower than it would be in the absence of ex post moral hazard. But it is never optimal to have a positive waiting time if the marginal cost of waiting is higher for patients with greater benefits from health care.

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1. Introduction

Ideal health insurance would have optimal risk bearing (equal marginal utility of income across health states) and optimal consumption of care (marginal value of care equal to its marginal cost). But insurers, whether public or private sector, can generally observe only expenditure, not health state. Thus insured patients face a charge, or coinsurance rate, for health care which is less than its marginal cost to the insurer, leading to ex post moral hazard. The optimal charge reflects the trade-off between risk bearing and control of expenditure.

But demand for care is also influenced by quality and waiting time. This suggests that it may be possible to increase welfare by using them to control utilisation and thereby improving the trade-off between optimal risk bearing and use and reducing the cost of ex post moral hazard. In this paper we investigate the role of quality and waiting time as part of an optimal health care insurance package.

We first compare the optimal first best level of quality when the insurer can control utilisation directly, with optimal second best quality where patients control utilisation but are influenced by the price of care and its quality. In both

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the first and second best optimal quality is set so that the marginal value of quality in terms of income is equal to its marginal cost. But because the insured's expenditure on health care is greater in the second best than in the first best, marginal utility of income is greater in the second best and hence the marginal value of quality in terms of income is lower. Hence the optimal level of quality is lower in the second best.

Waiting time can be thought of as an aspect of quality since increases in waiting time reduce the net benefits from treatment and thus reduce demand. Rationing of health care by waiting is common in many OECD countries (Siciliani and Hurst, 2005). It is an apparently inefficient method of allocating resources: it imposes a cost on the consumer in the form of delayed health improvement or reduced productive capacity. But unlike rationing by price the cost to the consumer is not offset by any gain for the producer, or indeed anyone else. The costs imposed on patients are thus a deadweight loss (Barzel, 1974).

We consider whether there is a welfare argument for rationing by waiting arising from its use to mitigate the welfare costs of ex post moral hazard. We show that a positive waiting time may increase welfare and we examine the factors influencing the optimal combination of coinsurance and waiting time to ration demand. However, we show that a necessary condition for an optimal positive waiting time is that the marginal cost of waiting is higher for patients with a smaller benefit from treatment. This seems implausible. It implies that a patient whose treatment will produce 1 QALY gain in health would be willing to pay more for a reduction in the waiting time from 6 months to 1 month than an otherwise identical patient with a QALY gain of 10. We therefore conclude that a positive waiting time is unlikely to improve the trade-off between efficient risk bearing and efficient utilisation of health care.

Although made in the context of a public-sector health-care system, our arguments carry over to the design of insurance contracts in competitive private insurance markets. They suggest that private insurance contracts will offer lower quality than would be the case if there was no ex post moral hazard. No private insurer in a competitive market will offer insurance contracts under which insureds are required to use particular providers with positive waiting times. It would always be possible for a competing insurer to offer a contract with no waiting time and a higher premium which would be preferred by insureds and would break even.

Previous welfare analyses of the quality of public services and waiting times for public health care have assumed that policy makers have distributional motives but face constraints on their tax and price instruments. Bucovetsky (1984) showed that providing rationed access to a good priced below cost pushes rich individuals into the private sector, thereby reducing the cost of financing the subsidised good consumed by the poor. Besley and Coate (1991) make a similar argument in which a good is produced at lower quality in the public sector than in the private sector. Hoel and Saether (2003) show that if distributional objectives are sufficiently strong, rationing by waiting can increase welfare even if governments can use non-linear tax schedules. However, the calculations by Marchand and Schroyen (2005) suggest that the welfare gains from rationing by waiting seem to be rather small. Our analysis uses a model specification (individuals who are ex ante identical and feasible lump-sum taxes) which rules out previous rationales for lower quality or rationing by waiting in the public sector to concentrate on the provision of insurance subject to ex post moral hazard.¹

Section 2 sets out the specification of the model where quality is controllable by the insurer. Section 3 compares the first and second best solutions. Section 4 adapts the model to cover waiting times and Section 5 shows how the conclusions of Sections 3 and 4 can be carried over to a competitive private insurance market. Section 6 concludes.

2. Model specification

The initial specification is a model of the choice of quality as part of an optimal public sector insurance package. There are no distributional motives and feasible lump-sum taxes, so that the choice of quality is not influenced by the usual optimal tax considerations. In Section 4 we adapt the model to cover waiting times and in Section 5 show that the specification, and hence the results, also apply to competitive private sector.

To rule out distributional arguments we assume that individuals are ex ante identical. There is a single treatment provided only in the public sector at a unit cost of $c(q)$, where q is the quality of health care. There is a charge p for treatment and any costs not covered by the charge are financed by a lump-sum tax T paid by all individuals. The

¹ Gravelle and Siciliani (2007a) consider the role of waiting times in allocating a fixed health care budget across treatments when the charges for care are fixed outside the health care sector, so that there are no insurance considerations affecting the optimal waits.

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