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# Alternative health insurance schemes: a welfare comparison

Bodil O. Hansen<sup>a</sup>, Hans Keiding<sup>b,\*</sup>

<sup>a</sup> *Institute of Economics, Copenhagen Business School, Solbjerg Plads 3, DK-2000 Frederiksberg, Denmark*

<sup>b</sup> *Institute of Economics, University of Copenhagen, Studiestræde 6, DK-1455 Copenhagen K, Denmark*

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## Abstract

In this paper, we present a simple model of health insurance with asymmetric information, where we compare two alternative ways of organizing the insurance market. Either as a competitive insurance market, where some risks remain uninsured, or as a compulsory scheme, where however, the level of reimbursement of loss is to be determined by majority decision. In a simple welfare comparison, the compulsory scheme may in certain environments yield a solution which is inferior to that obtained in the market. We further consider the situation where the compulsory scheme may be supplemented by voluntary competitive insurance; this situation turns out to be at least as good as either of the alternatives.

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## 1. Introduction

In recent years, several countries have experienced a growing concern about the organization of health care, its financing and its costs. In countries with a tax-financed health system, prolonged efforts in cost containment has led to severe strains in the organization of health care and the provision of its services, giving rise to waiting lists, queues, and failing ability to catch up with the development of new medical treatments. The understandable reluctance of the general public to accept an increased tax burden thus results in a general lowering of the quality of the services provided in the health care sector. This may very well

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\* Corresponding author. Fax: +45-3532-3085.

*E-mail address:* hans.keiding@econ.ku.dk (H. Keiding).

be at variance with the wishes of the same general public, who might be willing to spend more on health if the money was paid in another way than as general income taxes.

In the present paper, we consider a simple model of compulsory health insurance. Our model is a version of the by now classical model of adverse selection in the insurance market. Under free market conditions, if the individual risks cannot be observed by the insurer, then part of the public will choose no insurance. Assuming risk aversion, this will result in a utility loss both to the non-insured and the insured, as compared with what could have been obtained in the ideal situation where risks are observable by the insurer.

In view of this, it has been conjectured by [Akerlof \(1970\)](#) that compulsory insurance may be welfare improving, and this question of whether compulsory insurance may lead to a Pareto improvement has been investigated in detail by [Dahlby \(1981\)](#). In the present work, we expand on the seminal work by Dahlby in two directions: first of all, we introduce an equilibrium determination of the level of compulsory insurance, to be further explained below, and secondly, we consider welfare comparisons which go beyond Pareto improvements, such as utilitarian average utility comparisons and compensation criteria. The reason for this extension of the analysis is that introduction of a compulsory insurance in most cases implies a utility loss for the low risk individuals, so that Pareto improvement is ruled out unless the initial situation has some particular properties (so that the low risk individuals already choose the level of compulsory insurance).

To explain the need for an equilibrium determination of the compulsory insurance scheme, we notice that the scheme must be acceptable to the general public in order to survive; we incorporate this feature in our model by the condition that the coalition of individuals who pay more for insurance than they get from it, should not be a majority, since otherwise the system would probably be changed. It is assumed that the insurance scheme covers only part of the outlays caused by illness; the size of this coverage is to be determined by the general public by majority decision.

A compulsory scheme will force the low-risk individuals to have insurance at a cost which is higher than their willingness to pay, but on the other hand, since it covers everyone, the premium will be lower than if some people were left out. The final result is not clear, although there might be some intuition in favour of the all-embracing, compulsory scheme. We show that the compulsory system will not necessarily be superior to the market solution with its well-known welfare losses; the majority decisions with respect to the coinsurance part of the insurance scheme may lead to a result which is worse than the market solution in the sense that the winners gain less than what is lost by the losers. This result depends on the distribution of risk characteristics in the population, and it uses an interpersonal comparison of utility (all individuals are assumed to have identical utility functions), but it shows that universal participation in an insurance scheme does not by itself guarantee that the result is welfare superior to what can be achieved in the free market.

As was perhaps to be expected, the situation changes when the compulsory insurance scheme can be supplemented by individual insurance. In this case the mixed equilibrium, where coverage of the compulsory scheme is determined by majority decision and the cost of supplementary insurance by market conditions, is welfare superior (in the sense of Hicks-domination) to the equilibrium in a market with no compulsory insurance.

Since political conditions of majority enters as an important part of our argument, we use a model with an arbitrary number of different risk characteristics (rather than the two-type

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