Price dispersion in the private health insurance industry: The case of Catalonia

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ABSTRACT

This paper presents a vertical and horizontal product differentiation model that explains price dispersion among different kinds of health care insurance firms. Our model shows large insurance firms engaging in price competition with small mutual organizations that serve only a local area and charge lower premiums. We found that, although the market allows the entry of an excessive number of firms, the presence of local insurance companies increases social welfare by increasing the range of products available to consumers. Our conclusions are applicable to OECD countries in general although we rely on Catalonia's data.

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1. Introduction

In one third of OECD countries, 30% or more of their population has a private health insurance (PHI). The importance of PHI in each one of these countries is conditioned by the implantation of public health (Colombo and Tapay, 2004). Thus, whereas 35% of the population of the USA has PHI, this percentage decreases to 20% in Spain, 12.5% in Germany and 1% in Italy. From another perspective, whereas in some OECD countries PHI is an alternative to public health in others it is complementary to it.

The Spanish "Sistema Nacional de Salud" (National Health System) is a public healthcare decentralized mechanism that provides universal coverage. However, in addition to the taxes paid to finance public healthcare, almost a quarter of the population of Spain also pay an insurance premium to use private healthcare services. People pay a double coverage to access a greater number of healthcare providers, better hospital accommodation and shorter waiting lists.[1]

Spanish insurance firms providing health services establish a contractual relationship between healthcare providers, hospitals and doctors, and the insurance company (similar to USA's 'managed care') and account for approximately 90% of all health insurance plans. Health insurers that provide reimbursement of expenses ('traditional health insurance plans' in the USA) only account for the remaining 10%.

A recurrent fact of the health insurance industry is price dispersion. Literature explains it from clients' search costs, when they search prices and service qualities, and switching costs, when they decide to use a new provider (Gravelle and Masiero, 2000; Schlesinger and von der Schulenburg, 1991), factors both, implying a quite profitable industry. However, Spanish health insurance industry evidences low search and switching costs, because firms do not tend to penalize the newly insured, and they provide lists of health service providers, thereby limiting clients' search costs.[2] Furthermore, Spain's PHI companies do not enjoy huge profits, as their financial results show.[3] In consequence, the usual explanation of price dispersion, from search and switching costs, does not apply to Spanish health insurers.

The purpose of this paper is to explain that the largest dimension implies higher premiums among PHI firms, from an oligopoly model based on location and vertical differentiation, instead of search and switching costs. Schlesinger and von der Schulenburg (1991) previously used a horizontal differentiation model but they introduced switching costs. Our model captures, on the one hand, that large health insurers provide access to a long list of hospitals and healthcare professionals, whereas small mutual organizations are usually linked to a single hospital and have agreements with a small number of doctors; and on the other hand, that local firms compete with larger ones offering a wider range of healthcare services.[4]

We consider a game with entry and market stages and we cope with the difficulties imposed by a free entry equilibrium of unequal sized firms, by using the concept of equilibrium configuration (Sutton, 1998), which is based on two conditions, viability and stability, that are applied directly to outcomes rather than to strategies.

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[1] The OCU (an independent consumers' organization) has conducted a study on waiting lists in the 17 Spanish autonomous Regions (OCU, 2011), which highlights that for the full medical act (since the patient asks for the specialist until he is diagnosed), 4 months pass on average.

[2] Search and switching costs for private health insurers providing reimbursement of expenses, will be even lower, because insurers do not have to choose among healthcare providers.

[3] In 2003, their profit margin was around 3% of their sales and 6% of their net premiums, compared with an industry average of 9%. As a rule, the large companies are slightly more profitable than the small ones.

[4] Another difference with the work of Schlesinger and von der Schulenburg (1991) is that our model location serves not only to define market shares, but also proximity to consumers.

Models of switching costs, such as Padilla (1994), propose that the Spanish health insurance market is uncompetitive, has high profit margins and the entry of new firms will have a negative effect on social welfare. Our model also explains price dispersion, but, in contrast, we conclude that the entry of small, local, mutual organizations boosts competition, reduces the consumers' transport costs bringing more product variety to the market, and increases social welfare: firms' profits are lower and the welfare level is higher under this configuration than if there were only large health insurers.

The health system in Spain is decentralized. *La Generalitat* is the governmental body responsible for the regulation and control of the healthcare system in Catalonia, and provides detailed data of its health insurance industry, which is not available for other Spanish regions. For this reason, we have focused the study to Catalonia, even though this work's conclusions are applicable to all Spanish regions and to other OECD countries as well. In fact, our results are applicable to either relatively low concentrated industry in which, for the one hand, location near the final consumer defines a small niche or market segment, and for the other hand, product's quality and firm's market share are directly related, as is the case of the PHI industry.[5]

The rest of this paper is organized as follows: Section 2 introduces some data. Section 3 presents the model and Section 4 solves it by applying the concept of equilibrium configuration; Section 5 discusses welfare implications; and finally, Section 6 presents our conclusions.

2. Catalonia's private insurance industry that provides health services

Unlike other Spanish regions, Catalonia, with a percentage of population with double coverage lightly higher than the Spanish average, provides detailed data about its health insurance industry. From 2002, *La Generalitat* elaborates an annual report, *Entitats d'Assegurança Lliure d'Assistència Sanitària* ("*Private Insurance entities which provide Healthcare*") (Generalitat de Catalunya, 2002-2008), which presents statistical information of health insurers.

As in many other OECD countries, insurance firms that provide healthcare services evolved from early co-operatives of doctors who give people comprehensive healthcare in exchange for a fixed fee. Today, the industry consists of corporations, which account for more than 85% of all health insurance premiums in Catalonia, and mutual organizations, which keep the remaining 15%.

The sector has low industrial concentration, as evidenced by a Herfindahl index of $H = 0.07$, implying many equivalent firms, $N = 1/H = 14$. There are 55 health insurance companies in total, but most of them are very small in size and develop its activity in a small territory, i.e., are of local nature. The values of other concentration indexes, as a $R_4 = 0.46$ and a $R_8 = 0.69$, show that the 8 largest companies control most of the insurance industry that provides health services, especially the 4 largest with a share of almost 50% of premium earnings. The fragmentation of the sector and the small size of many insurers denote low entry costs to industry.

Data shows that corporations, generally large sized companies, charge higher premiums than mutual organizations, which usually have small dimension.[6] Therefore the industry is characterized by price dispersion. Between 2002 and 2008, major insurers have a 30% increase in the people

insured, up to 1.6 million. The average premium increased by 33%, from € 497 to € 659 and the revenues from premiums went up 72% to € 1.055 million in 2008, with an annual increase of 8%. In the group of small mutual organizations, the average premium increased in the period by 55% of € 271 to € 480; the people insured grew by 12% up to 85,536 citizens; and revenues rose 38% up to € 36 million, with an annual revenue growth rate of 4.8%.

3. The model

We model the Catalonian PHI market as an oligopoly with product differentiation. Each firm's output is defined by two characteristics, one horizontal, h, the location where the firm provides its services, and the other vertical, s, the quality of healthcare services offered by the health insurance firm. We assume that h is a continuous variable, $h \in [0,1]$, whereas s is a discrete variable that only takes two values, the two possible qualities of healthcare services, high quality (type a) and low quality (type b), $s \in \{s_a, s_b\}$, $s_a - s_b = \theta > 0$.

Better quality signifies in particular access to a wider range of healthcare services. In the event of illness, any consumer prefers a policy that provides access to a greater number of medical professionals, hospitals and other services. As a rule, large insurance companies offer long lists of affiliated hospitals and healthcare professionals, whereas small local or regional firms are usually linked to a single hospital and a small number of doctors.

We assume that there are $m \in \mathbb{N}$ local markets represented by m circumferences of perimeter equal to $1/m$ each one. A firm locates in only one location in a unique local market. Thus, a firm takes only one value $h \in \left[\frac{j}{m}, \frac{j+1}{m} \right]$, $j = 0, 1, \dots m-1$. In each market one firm of low quality and 2 firms of high quality are located equidistant from one another on the circle and compete among them. Each firm of quality s_a competes directly with one firm of equal quality and with another of lower quality, s_b. This assumption captures that a small firm operating in a local market competes with large firms and generally does not compete with other small firms. Otherwise, large insurance companies compete both with each other and with small, local firms. Thus, if m is the number of active local markets, there will be $n = 3m$ firms, two thirds of which are of quality s_a or type a and the remaining third are of the type b with quality s_b.

Higher quality implies greater investments in long-lived assets and higher fixed costs which in per-capita terms, which are denoted as $f_i, i = a, b, f_b < f_a$. As is common in product differentiation models, we consider marginal costs constant and equal to c for all firms. That is, firm's sales effort does not influence quality.[7] To simplify and without loss of generality we assume further that $f_b = c = 0, f_a = f$.

There are H consumers, located uniformly on the m circles with total perimeter equal to 1. We model individual preferences by incorporating the usual assumptions in the spatial approach to horizontal product differentiation (see, for example, d'Aspremont et al., 1979). We assume that consumer preferences differ with respect to h, but that all consumers value s equally: all individuals are willing to pay the same amount for a given level of quality, but the transport cost of each consumer is a function of their distance to the firm.

Each consumer wishes to buy, as most, one unit of product. The consumer located at h who buys a unit of product from firm i, with quality s_i and located at h_i, gets a utility:

$$v(h, i) = s_i - p_i - |h - h_i|$$

where s_i is the surplus that the consumer obtains by purchasing one unit of the good i; p_i is the price of the output of the firm i, identical for all units of output; $-|h - h_i|$ is the transport cost over the distance $|h - h_i|$.

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[5] Our explanation of price dispersion can be applied to health insurers that provide reimbursement of expenses, with some proviso. On the one hand, although there are no different qualities of money, efficiency (lower marginal costs) or brand image defines alternative vertical characteristics positively correlated with market share; on the other hand, despite that there are no reimbursement insurers with only local activity, location can be interpreted in a broad sense as giving a personalized service, a characteristic little compatible with a high market share. In fact, our model can explain price dispersion among insurers in general.

[6] Two mutual organizations, *Quinta de Salut L'Aliança* and *Mutual General de Catalunya*, have a large dimension. As we are interested in the firm size effect on the premium charged, rather than the effect of its legal characteristics, we have grouped these two entities of these two companies jointly with corporations.

[7] The model is flexible and also can be interpreted in the sense that a high quality insurer develops activities in several areas. Just suppose that the insurer has the same entry sunk costs in each local market then, each one operates as an independent company.