



# Structural and managerial cost differences in nonprofit nursing homes



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## ABSTRACT

Population aging is challenging governments to find new solutions to finance the increasing demand for nursing home care and slow down the increase in expenditures. In this light, many European countries are currently considering reforms to increase efficiency in the provision of nursing home services. One popular restructuring policy is the transformation of public organizations into private nonprofit organizations. The underlying assumption is that private nonprofit nursing homes are more efficient than public nursing homes. However, there is limited empirical evidence to support this view. This analysis aims to contribute to the evidence base on this issue by investigating the impact of the organizational form on the costs of nursing homes. We use a sample of 45 nursing homes from one Swiss canton over a 5-year period (2001–2005). The applied estimation strategy provides more accurate estimates as compared to previous studies. In particular, we distinguish between cost differences that are under the control of the managers from those that are not (structural). Our findings suggest that public nursing homes are more costly than private nursing homes, although the difference is small. This cost difference is mainly driven by structural rather than managerial costs. Therefore, cost-reducing policies that promote private nonprofit nursing homes are expected to reduce costs only slightly.

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## 1. Introduction

The influence of different organizational (institutional) forms on nursing home (NH) costs is a relevant issue in most health care systems. The institutional form affects the structural and managerial costs of NHs. Therefore, some institutional forms may prove to be more successful than others in providing cost-efficient services. Evidence regarding the impact of institutional forms on costs can inform policy-makers regarding preferred modes of delivering services to the elderly population.

In the last decade, different restructuring policies have been implemented to control public health expenditures, such as bed downsizing in hospitals (Piacenza et al., 2010). In the provision of nursing home services, a focus of restructuring policies has been the transformation of public NHs into private nonprofit (NFP) NHs. However, little evidence exists on differences in cost efficiency between institutional forms that support these policies.

This study aims to provide evidence on the impact of the institutional form on NH costs by exploring data from a region of Switzerland, the canton of Ticino. Because of high heterogeneity in the regulation and definition of nursing home services across countries, the investigation of differences in cost efficiency between institutional forms can be

better conducted by focusing on relatively homogeneous areas. Also, the tight and heterogeneous regulation of long-term care across regions or countries generally implies a limited access to detailed and comparable data on costs of different organizational structures. Switzerland represents an ideal setting for our investigation since NH services are mostly provided by regulated nonprofit firms and the country exhibits an almost perfect balance between private and public organizations. However, Switzerland is a federal country made of 26 cantons (states) with remarkable differences in terms of healthcare organization. Cantons have large autonomy in the provision and regulation of nursing home care. This leads to large heterogeneity in the organization of the supply. Therefore, the focus on one Swiss canton offers important advantages in terms of precision of cost data and their comparability between institutional forms.

The literature on cost efficiency of NHs has mainly focused on the effect of the ownership rather than the institutional form (e.g., Chou, 2002; Santerre and Vernon, 2007; Grabowski et al., 2009). To our knowledge, only a few studies analyze the impact of the institutional form (e.g., Holmes, 1996; Vitaliano and Torren, 1994). Two of them use Swiss data (Farsi and Filippini, 2004; Farsi et al., 2008) but do not distinguish between different types of efficiency.

In this study, we distinguish between structural and managerial cost differences to explain the mixed results found in previous analyses. Managerial cost differences reflect the ability of the managers to run a facility and can be expected to vary over time. Structural differences

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are constant features that are beyond the control of the managers, and may result from different production processes that characterize institutional forms. For instance, we think of political constraints, labor contracts, governance procedures, the location of NHs, and constraints in the choice of residents. We propose an empirical strategy to investigate the presence of both types of cost differences between public and private organizations.

The remainder of the paper is organized as follows: In Section 2 we briefly discuss the related literature on structural and managerial differences between NFP organizations providing nursing home services. In Section 3 we define different institutional forms in NH care and describe our setting. Then, in Section 3.1, we sketch a theoretical model to derive hypotheses on the impact of managerial behavior and institutional aspects on cost efficiency. In Section 4 we present our econometric approach to compare cost efficiency across different institutional forms, and we discuss the results. Section 5 is the conclusion.

## 2. Related literature

Kapur and Weisbrod (2000) recognize that government and private NFP firms do differ in their objective functions. Theoretical work points at different reasons why public and private NFP organizations may differ. The decision-making process in NHs varies across organizational forms, for instance because of different legal constraints or political pressure. Hart et al. (1997) see public managers as being constrained by some governments' agreement to implement any cost innovation decision while managers of private NFP firms can freely implement these decisions. In addition, these firms are expected to face lower probability of being bailed out by public authorities or tougher punishment for poor managerial effort. Differences in the institutional form may then lead to differences in NH efficiency.

From an empirical perspective, the issue of the institutional form in the NH sector has been partially addressed in the economic literature. The focus has mainly been on the effect of the ownership form by comparing for-profit to NFP organizations. Government-run organizations have typically been excluded from the analyses due to the small presence of public facilities in the US or due to the expectation that government NHs behave in a very different way than for-profit and NFP organizations (Grabowski et al., 2013). These studies show that for-profit NHs are less costly per client than NFP NHs but provide lower-quality services (Hillmer et al., 2005; Knox et al., 2002; O'Neill et al., 2003; Schlesinger and Grey, 2006). However, there is lack of empirical evidence on differences between public and private NFP organizations.

To our knowledge, only a few studies empirically analyze the impact of the institutional form on the performance of NFP NHs, with mixed results. Farsi and Filippini (2004) estimate inefficiency using the Schmidt and Sicklers (1984) random effects (RE) model on Swiss data. The authors show that private NHs are more efficient than public NHs. The study has two main drawbacks. First, inefficiency is assumed to be constant over time, and cost differences that change over time are captured by the error terms. Given the length of the panel, the assumption of time-invariant inefficiency may not be appropriate. Second, the results can be biased in the presence of unobserved factors that remain constant over time since the individual effects are interpreted as inefficiency. To address these limitations, Farsi et al. (2008) apply a true random effect model (TRE). This model allows for time-varying inefficiency and controls for unobserved heterogeneity with the individual effects. Therefore, time-invariant cost differences are interpreted as heterogeneity. The authors do not find evidence of significant differences between institutional forms. However, the authors only capture inefficiency that varies over time. Constant inefficiency is captured by the individual effects rather than being included in the traditional inefficiency term. This may lead to imprecise results if part of the inefficiency is due to features that do not change over time.

With respect to previous Swiss studies, the novelties of this paper are two. First, we propose an empirical strategy that provides information on efficiency due to structural differences related to the institutional form. Second, we sketch a theoretical model to disentangle the impact of institutional aspects from the behavior of managers on cost efficiency.

## 3. Institutional forms in nursing home care

According to the ownership type, NFP NHs are usually categorized into public and private NHs. Although these types are supposed to reflect differences in the control of funds and the production process, the classification may not effectively capture differences in the organizational form. A more sophisticated insight looks at the institutional form, which underlines property rights or legal constraints affecting different institutions. Hence, public-law NHs are public administrative units without a separate juridical status from the local public administration and are directly integrated into it. The governing body is represented by local politicians (city council), while the executive arm is left to the municipality, which delegates it to a manager. Conversely, private-law NFP NHs usually take the form of a foundation. Generally, foundations are created by individuals or private legal entities. In some cases, local governments decide to create private-law NFP NHs. Therefore, when local governments set up a foundation to provide nursing home services, this is a private-law institution owned by the government. In both of these cases the governing body is the foundation council.

These institutional types apply to Switzerland where the provision of NH services is dominated by NFP institutions regulated at cantonal (state) level. In some cantons the provision is further decentralized at the municipality level. In this case, each NH provides care to the residents of a given area. The choice of the NH does not depend on price and quality aspects since individuals are usually assigned to the NH in the former place of residence. Therefore, NHs generally operate as local monopolies, i.e. clients have no choice of NH. Prices are subsidized by the cantonal regulator, leading to excess demand and waiting lists. In the Swiss Canton of Ticino, where we focus this analysis, around 51% of NFP NHs are private-law organizations, and 49% are public-law organizations.

### 3.1. A theoretical approach

We assume that low managerial effort translates into low efficiency levels of NH care.<sup>1</sup> The total costs of the NH are described by the following equation:

$$\tilde{c} = \tilde{\theta} - g(e), \quad (1)$$

where  $\tilde{\theta}$  defines costs that are independent of managerial effort,  $e$ .  $\tilde{\theta}$  is a random variable that takes value  $\underline{\theta}$  with probability  $q_z$  and  $\bar{\theta}$  with probability  $(1 - q_z)$ , with  $\bar{\theta} > \underline{\theta}$ . The subscript  $z$  indicates the institutional form, i.e. public-law ( $Pu$ ) or private-law NFP ( $Pr$ ).  $\tilde{\theta}$  depends, for instance, on political constraints, labor contracts, procedures, the location of the NH, and the mix of residents which are regulated by the law.  $g(e)$  is a function that measures the impact of manager's effort on costs. This depends on the difference between the benefit of effort for the NH in terms of cost reduction,  $\rho(e)$ , and the cost of remunerating manager's effort through an increase in the wage. Hence, manager's effort reduces total cost but may imply a higher wage,  $w_z(e)$ . Generally, the benefit of effort for the NH offsets the cost of remunerating manager's effort. Therefore, the net effect of effort is expected to be a reduction in costs, i.e.  $g(e) > 0$ . To simplify the analysis, we assume  $g(e) = \rho(e) - w_z(e) = e$ .<sup>2</sup>

<sup>1</sup> This approach is inspired by the early work of Haskel and Sanchis (1995), among others.

<sup>2</sup> The level of effort  $e$  is assumed to be bound in the interval  $e \in [0, e_{max}]$ , where  $e_{max} = q_z(\bar{\theta} - \underline{\theta})$ . This interval is known to the regulator and ensures that NHs with high costs ( $\tilde{\theta} = \bar{\theta}$ ) can never move costs down the low cost level ( $\tilde{\theta} = \underline{\theta}$ ).

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