



The interplay between regulation and efficiency: Evidence from the Austrian hospital inpatient sector



Margit Sommersguter-Reichmann ^{a, *}, Adolf Stepan ^b

^a Department of Finance, Karl-Franzens University of Graz, Universitaetsstraße 15, 8010 Graz, Austria

^b Department of Management Science, Technical University of Vienna, Theresianumgasse 27, 1040 Vienna, Austria

ARTICLE INFO

Article history:

Available online 30 September 2015

Keywords:

Data envelopment analysis
Efficiency
Regulation
Hospital inpatient care
Output control

ABSTRACT

The Austrian health policy aims to maintain and even expand high-quality health care. The implementation of an integrated master plan, which contains input and output target values for the overall health care system, is an important regulatory intervention. To support the regulatory authorities, efficiency studies that simultaneously reveal input and output improvement potential can be promising. To serve this purpose, we computed bootstrapped non-oriented super-efficiency measures to identify any improvement potential in inputs and outputs for the Austrian hospital inpatient sector for four years. Variations in hospital efficiency were investigated using non-parametric post-efficiency analyses.

© 2015 Elsevier Ltd. All rights reserved.

1. Introduction

Endeavors to assess the efficiency of health care systems and health care providers have grown rather than diminished during recent decades, mainly as a result of tight budgets and ever-increasing hospital costs. Austria has, similarly to other countries, committed itself to identifying and exploiting any efficiency potential to cope with the many challenges that a health care system faces. The most important of these are the demographic development, the health status of the population, the development and diffusion of technologies and new medical procedures, and the organizational design of the health care system, because these are directly related to health care expenditures and their growth [1]. Since Austria relies on public funds to finance health care, the need for efficient use of resources is exacerbated [2]. The triggers of efficiency studies have often been interventions in the health care system in the form of regulatory measures. In Austria, health care regulation takes place at different levels to varying degrees and with different instruments. The monitoring of regulatory interventions, in turn, is conducted to ensure that the regulated supply of the population with health services can be maintained or even expanded in the future. In Austria, efficiency studies have predominantly been performed by academic researchers and

devoted to the hospital sector, mainly due to data availability reasons.

Following the efforts of health policy to maintain and even expand high-quality health care, the Austrian health care system has faced a plethora of regulatory reforms during the last two decades, which have addressed its various problems. Two reform initiatives are highlighted here as they are considered to be closely connected to efficiency considerations: first, the transition from the per diem financing of inpatient care in public and private not-for-profit (NFP) hospitals to activity-based financing based on Austrian-specific diagnosis-related groups (DRGs) in 1997 [3]; and second, the transition from solely input-oriented and rather uncoordinated planning of the health care system to an integrated master health plan (the so-called OESG), set at the federal level for the overall health care system, and its refinement in the form of the regional health plans at the state level (so-called RSGs) in 2005 [4]. For a comprehensive overview of the reform initiatives until 2012, see Hofmarcher and Quentin [5].

Following the 1997 hospital financing reform, efficiency assessments in the hospital sector have repeatedly been the subject of scientific studies in Austria. Many studies have used data envelopment analysis (DEA), but some of the more recent studies have complemented DEA with stochastic frontier analysis (SFA) to assess the sensitivity of the results with respect to the methodological approach [6–13]. While DEA is free from any ex ante assumptions concerning the functional input–output relationship but prone to outliers, SFA requires ex ante specifications of the functional relationship between inputs and outputs and the distributional

* Corresponding author.

E-mail address: margit.sommersguter@uni-graz.at (M. Sommersguter-Reichmann).

characteristics of the inefficiency term. For an overview of the most important advantages and disadvantages of both approaches, see Jakobs et al. [14]; for an introduction to benchmarking in health care, see Ozcan [15].

So far, the motivation for performing efficiency studies in Austria has predominantly been to analyze the impact of the DRG-based financing on hospital technical and scale efficiency. A common feature of the above-mentioned Austrian-specific DEA studies was the use of an input-oriented efficiency measure. Input orientation was basically justified by the argument that hospitals, as decision-making units (DMUs), have an influence on inputs while output control is either beyond their capabilities or undesirable from a regulatory perspective. In the first case, it is argued that hospitals have a passive role, that is, they can only respond to patients' needs and cannot perform proactively. In the latter case, output control is basically equated with supplier-induced demand. If, however, the regulatory authority suspects supplier (physician)-induced demand, action must be taken to identify its causes. As recent research has revealed [16,17], institutional corruption may explain the undesirable activities of actors, such as hospitals and hospital doctors, whenever they improperly depend on third parties whose objectives deviate from public health goals. Following the definition provided by Lessig [17], institutional corruption reflects systemic and strategic practices or influences that undermine an institution's effectiveness. As hospitals and hospital doctors, in particular, receive additional income from supplementary health insurance in Austria, income-generating behavior on the part of physicians and hospitals may conflict with public health needs. However, one should bear in mind that output control may well have desirable aspects, such as strengthening specialization initiatives and exploiting void capacities through reorganizing patient flows, all of which are of considerable importance in the light of regulatory interventions.

Based on the two above-mentioned arguments, any efficiency enhancement so far has concentrated on input adjustments. In so doing, the above-mentioned studies have complied with the majority of hospital efficiency studies in the literature. Although the overview paper by Hollingsworth [18] did not explicitly capture the orientation of efficiency measures, the economic efficiency studies referenced in the review referred to cost efficiency only (as opposed to revenue efficiency), thereby indicating input orientation. An earlier study by Sommersguter-Reichmann [13] covering 54 hospital studies published between 1980 and 2000 revealed that most studies (74%) had chosen an input-oriented perspective, a result that was confirmed by the more recent taxonomy provided by O'Neill et al. [19, p. 171]. Input-oriented performance assessment can still be found in recent hospital studies (see, for example, Biørn et al. [20], who investigated hospitals' responses to financial reforms in Norway using bias-corrected cost-efficiency estimates, or Blank and van Hulst [21], who scrutinized the impact of hospital governance characteristics on bootstrapped cost-efficiency estimates; Ferrier and Trivitt [22] used DEA to assess the input efficiency of US hospitals based on output-oriented measures to consider quality aspects).

The opinion, however, that output control can be quite reasonable and cannot be reduced to supplier-induced demand only seems to be increasingly prevalent. In an early paper, Chang et al. [23] justified the use of an output-oriented radial efficiency measure to assess the impact of regulatory interventions in the form of the introduction of national health insurance in Taiwan with the argument that health care providers anticipate a certain extent of demand and therefore take actions, for example in terms of investments, to cope with the expected demand. Inputs, in their opinion, are difficult to adjust in the short term, while output control is quite possible. Mogha et al. [24] also justified the use of an

output-oriented efficiency measure with the limited influence on inputs in the short run, '[...] while outputs [...] somewhat may be increased by providing better facilities to the patients.' Araújo et al. [25] motivated the use of a radial output-oriented approach to assess the efficiency of Brazilian profit-oriented hospitals with the argument that profit-oriented hospitals are supposedly revenue-maximizing businesses. Attempts to take quality measures and bad outputs into account have also been associated with the choice of an output-oriented efficiency measure: Karagiannis and Velentzas [26] assessed output-oriented productivity changes for a sample of Greek public hospitals while considering the quality of services. Using an output directional distance function to consider good and bad outputs (such as mortality and infection rates), Falavigna et al. [27] studied the impact of the hierarchical administrative organization on the efficiency of hospitals in Italy; Wu et al. [28] applied an output-oriented directional distance function approach to measure the quality-adjusted performance of hospitals in Taiwan. Mogha et al. [29] used an output-oriented slack model to reveal the overall improvement potential of public sector hospitals in India.

Recently, Spinks and Hollingsworth [30, p. 424] argued that the public wants the maximum of health outcomes to be provided with the minimum of resources. This is a strong argument for the use of a non-oriented efficiency measure that is able to capture input and output improvement potential simultaneously. Their line of thought was also taken up by Bilsel and Davutyan [31], who applied a non-oriented directional distance function approach to assess the efficiency of rural Turkish hospitals. Similarly, Du et al. [32] used a non-oriented additive super-efficiency model to analyze the efficiency of US general acute care hospitals. Kawaguchi et al. [33] integrated a non-oriented slack-based model within a dynamic network approach to measure the efficiency of Japanese municipal hospitals following regulatory interventions to overcome the financial crisis that hospitals have faced during the last decades.

With regard to the situation in Austria and in view of the 2005 health reform, it is obvious that a comprehensive efficiency evaluation is essential as the OESG/RSGs contain input and output target values that are, at least to a certain extent, based on actual performance. If, however, inefficiencies in service provision prevail, there is a significant risk that these inefficiencies will be carried forward in the future and will probably continue to increase. While the 1997 hospital financing reform inspired several efficiency studies to assess whether hospitals, as DMUs, respond to changes in financial incentives, the importance of efficiency studies with regard to the health reform of 2005 lies elsewhere: if the target values used in the OESG/RSGs are based on inefficient service delivery, the goal of obtaining the best possible result from regulatory interventions is vulnerable. In the worst case, unnecessary capacity building might be the result given the projected growth in the demand for health care services. This means for efficiency studies that both input and output inefficiencies have to be eliminated to avoid unnecessary capacity expansion or to hinder capacity-reducing innovations, particularly within the cost-intensive inpatient care sector. The use of a non-oriented efficiency measure therefore seems to be an appropriate tool for supporting the regulatory authorities regarding the possible extent of input- and output-side improvements.

While in the ideal case efficiency studies will be carried out for all the sectors covered by the OESG/RSGs, namely the inpatient sector, the ambulatory sector and the rehabilitative and nursing care sector, the actual situation reveals that the data availability and data quality outside the inpatient care sector still have to be classified as rather poor. Therefore, for a while, efficiency studies will still have to concentrate on the hospital (inpatient) setting, for

متن کامل مقاله

دریافت فوری ←

ISIArticles

مرجع مقالات تخصصی ایران

- ✓ امکان دانلود نسخه تمام متن مقالات انگلیسی
- ✓ امکان دانلود نسخه ترجمه شده مقالات
- ✓ پذیرش سفارش ترجمه تخصصی
- ✓ امکان جستجو در آرشیو جامعی از صدها موضوع و هزاران مقاله
- ✓ امکان دانلود رایگان ۲ صفحه اول هر مقاله
- ✓ امکان پرداخت اینترنتی با کلیه کارت های عضو شتاب
- ✓ دانلود فوری مقاله پس از پرداخت آنلاین
- ✓ پشتیبانی کامل خرید با بهره مندی از سیستم هوشمند رهگیری سفارشات