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Review

Hospital ownership and efficiency: A review of studies with particular focus on Germany

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ABSTRACT

The German hospital market has been subject over the past two decades to a variety of healthcare reforms. Particularly the introduction of diagnosis-related groups (DRGs) in 2004 aimed to increase efficiency of hospitals. The objective of the paper is to review recent studies comparing the efficiency of German public, private non-profit and private for-profit hospitals. The results of the studies are quite mixed. However, in line with the evidence found in studies from other countries, especially the US, the evidence from Germany suggests that private ownership (i.e., private non-profit and private for-profit) is not necessarily associated with higher efficiency compared to public ownership. This may be a surprising result to many policy makers as private for-profit hospitals are often perceived the most efficient ownership type by the public.

1. Introduction

Because of increasing cost pressure, the hospital sector in Germany has been subject over the past two decades to a variety of healthcare reforms aiming to stabilize expenditures at sustainable levels. One major reform in recent years was the introduction of a new system of reimbursement based on DRGs. Since 2004, all 1800 German hospitals that provide inpatient acute care receive DRG payments from statutory health insurance funds and private health insurance companies. In addition, the introduction of DRGs was preceded by the implementation of an external quality assurance program (as opposed to the internal system of an individual hospital). It includes a number of mandatory measures, including a nation-wide benchmarking exercise based on more than 300 quality indicators. These two elements represent the most significant reforms in the German hospital sector since the system of dual financing was introduced in 1972 where the state is responsible for capital costs, whereas running costs are paid by sickness funds or private patients. The chief motivation behind this fundamental overhaul of the old reimbursement system, which was based on per-diem charges, was to set financial incentives that would increase the efficiency of German hospitals [1,2].

Due to substantial overcapacities and the rapid changes currently taking place in the regulatory and competitive environment, the German hospital sector is now facing an extensive process of consolidation and reorganization. In this context, hospitals are considering mergers, acquisitions, and cooperative agreements as ways to improve competitiveness. Germany traditionally has a multi-ownership structure in the hospital market which is even legally stipulated (e.g., hospitals' capital costs are covered by the state independently of actual ownership on an annual basis) [3]. Therefore, three different types of hospital ownership have co-existed for decades: private for-profit (FP), private non-profit (NP), and public (PB). As

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their classification implies, both types of private hospitals are owned by private entities, whereas public hospitals are owned by public entities such as local or regional governments. Between 1995 (i.e., share of inpatient beds: 56% PB, 38% NP and 6% FP) and 2008 (i.e., share of inpatient beds: 49% PB, 36% NP and 15% FP), a substantial number of local and regional governments in Germany sold their hospitals to private for-profit and private non-profit owners. The total number of private for-profit hospitals increased by 164, or 44%, which represented a rise in market share from 6% to 15%, measured in terms of inpatient hospital beds. During the same period, the market share of private non-profit hospitals decreased slightly, from 38% to 36%, because some non-profit hospitals were also converted to for-profit ownership [4]. The objective of the paper is to perform a review on the findings of empirical research on the association between hospital ownership and efficiency in Germany.

2. Criteria and methods to measure hospital performance

There are different concepts used to measure financial performance of organizations. Measures often used in other industries such as return on investment or other profitability measures are not regarded as appropriate to compare the financial performance between public, private non-profit and for-profit providers. A critical difference between public, private non-profit and for-profit hospitals is their orientation towards financial performance. Private entities have access to the capital market and are thus incentivized to show the highest possible profits in their reports to attract investors. Public and non-profit hospitals are expected to be generally averse to seek profit maximization as, in particular public hospitals, may be faced with the problem that their profits are taken away by public owners and spend for other public goods [5].

It thus seems reasonable to assume that using financial performance criteria, such as profit margins, in comparisons of ownership types may lead to bias. Therefore, measures of performance are needed that are rather homogenous in terms of incentives for different ownership types. For this reason, measures such as cost per case, and efficiency are used in this context. In particular, governments clearly have an interest in assessing the efficiency of their health care organizations and therefore efficiency is a measure that has been frequently used in the hospital context over the last decade.

The character of public services (e.g., health care, education, public transportation) often implies that the service quality is a primary objective in addition to efficiency. Indeed, quality of care is one major objective for hospitals in addition to efficiency. For the hospital sector, a common assumption is that better quality of care requires more resources and therefore reduces efficiency. However, differences in the trade-off between efficiency and quality of care among public and private non-profit providers have attracted little attention from empirical studies in that field of research. There is a rich body of literature on the impact of hospital ownership on quality of care but only very few studies have analyzed the relationship between ownership, efficiency and quality of care simultaneously. Eggleston et al. [6] provide a comprehensive review on the findings regarding hospital ownership and quality of care.

Researchers often employ two different methodologies to assess hospitals efficiency: stochastic frontier analysis (SFA) and data envelopment analysis (DEA). In general, SFA measures technical or cost efficiency while DEA mainly measures technical efficiency In particular, technical efficiency is a measure of how well an hospital produces output from a given amount of input, or alternatively produces a given amount of output with minimum quantities of inputs. Cost efficiency occurs when a hospital chooses a cost-minimizing input mix, given input prices.

Both approaches make inferences about efficiency from a residual. The major empirical difference between the two approaches is that SFA assumes the residual term reflects both inefficiency and random factors, while DEA is a purely deterministic model that assumes all departures from best-practice frontier reflect inefficiency. The deterministic nature of DEA means that this method depends on available data points to identify inefficiency. On the other hand, SFA is criticized for relying on parametric assumptions about the functional form, and for the weaknesses of regression in extrapolation to identify inefficiency. However, DEA and SFA differ in ways in which they identify inefficiency. In either case, wrong assumptions about the functional form, misspecification of the models, or omitted variables can easily bias the results [7–9]. When comparing DEA to SFA, Linna [10] and Webster et al. [11] found that both methods yielded comparable results in measuring hospital efficiency. We included studies using both DEA and SFA in our review.

3. Theoretical background

Most of the existing research relies on agency theory, property-rights theory, or public choice theory to describe the behavior in mixed ownership markets for health services. All three theories provide different explanations of a common outcome and posit that private ownership (i.e., private non-profit and private for-profit) is superior to public ownership in terms of efficiency due to differences in objectives, incentives, and control mechanisms.

Agency theory assumes that agents (e.g., managers) seek to maximize their own utility rather than that of the organization or its principals (e.g., owners). Consequently, in all three types of hospitals, owners are faced with a principal-agent dilemma. The agency theory assumes that private for-profit hospitals are better able to address this dilemma and are thus more likely to achieve greater efficiency [12–15]. For example, the owners of this type of hospital may use profits as their measure of a manager's success and can limit divergences from their interest by making the manager's compensation a positive function of these profits. The income of physicians in private for-profit hospitals can also be tied to a hospital's financial performance. Within public and private non-profit hospitals, the income of individual decision makers is rarely tied to a hospital's performance, creating little incentive to enforce efficient behavior.