

# ABSTRACTS

Chapter 1 discusses the objective of the book and presents an outline. It explains the relevance of the subject not only from a social point of view, but also for the economy as a whole. Hospitals worldwide command the majority of any countries' health care budget. Reasons for these higher costs include the aging of the population requiring more intensive health care treatments, the relatively high costs of labor in this labor-intensive industry and payment systems that may encourage inefficient behavior on the part of hospital managers and physicians. There is also a special role of technology in the hospital. It has been argued that advances in technology are one of the major reasons for hospital cost increases. Further Chapter 1 indicates that from international comparison we may conclude that large differences in hospital productivity exists. Chapter 1 presents an outline of the other chapters in the book, varying from issues dealing with privatizing, liberalizing, ownership, networks, budgeting, management skills, innovations and government facilitating research on productivity enhancement.

Productivity is an important variable in monitoring and benchmarking exercises. Chapter 2 discusses the basic accounting model as well as some measurement problems. Though this model is derived for production units operating in a market environment, with minor modifications it can serve for regulated environments such as the hospital industry. Chapter 2 proceeds by reviewing a number of methods for decomposing productivity change or difference.

Chapter 3 emphasizes that hospitals are complex service organizations that ultimately treat each patient one at a time. The complexity is of a type that makes modeling attempts to simplify the characterization of services be limited by fundamental tradeoffs that require careful attention to the context of the questions being asked by the researcher. In particular, there are a number of key tradeoffs that apply in particular hospital situations, including taking a patient focused vs. an organizational/service provision focus view of the hospital services, taking a cost/expenditure based focus vs. an outcome focus, and the level of aggregation for the analysis. These attributes are crucial and decisive in determining the course of measuring hospital productivity and they cannot be determined completely objectively.

As a result, high quality hospital productivity research must carefully state research objectives and questions and align the analytic choices to that context and communicate clearly to the communities consuming the research.

Chapter 4 discusses that hospital industry has become increasingly consolidated through the formation of multi-hospital health systems and networks and the legal merger of institutions under a single license. However, despite extensive structural consolidation and relationship development, service line integration within newly structured hospital organizations has lagged behind. In fact, hospitals that merge or affiliate with a system or network typically look no different after these actions in terms of their operations and services than they did before. This chapter examines what hospitals have accomplished through their efforts to structurally consolidate – what exactly changed about their operations, what were the barriers and facilitators to that change, and what ultimate effects consolidation had on hospital costs and financial performance. In addition, the chapter examines why we may be seeing increased service line integration in selected areas in the future.

Chapter 5 investigates how hospital affiliation in a multi-hospital system (contract managed, owned, sponsored), the number of hospitals in a system, HMO and PPO contracts, and other factors, impacts hospital cost efficiency. Separate stochastic cost frontiers were estimated for rural and urban hospitals. The data sample is a 1996 to 1999 panel of 248 U.S. Midwestern hospitals. Empirical results show that for urban hospitals on average, signing more HMO contracts, increasing the number of hospitals in the system, and membership in multiple organizations (alliance and system) compared to only membership in a system, contributes to improvements in cost efficiency. Signing more PPO contracts, system ownership and system contract management/sponsorship of hospitals did not contribute to improvements in cost efficiency. For rural hospitals, system ownership and system contract management/sponsorship of hospitals contributed to improvements in hospital cost efficiency. Increasing the number of hospitals in a system led to a small improvement in cost efficiency. Signing more HMO and PPO contracts, and membership in multiple organizations (system and alliance) compared to membership in only a system did not help enhance hospital cost efficiency.

Chapter 6 studies the relationship between technology and productivity of Dutch hospitals. In most studies technology change is measured by a proxy, namely a time trend. In practice however, innovations slowly spread over all hospitals and so different hospitals are operating under different

technologies at the same point of time. In this study we explicitly inventory specific and well-known innovations in Dutch hospital industry in the past 10 years. These innovations are aggregated into a limited number of homogenous innovation clusters, which are measured by a set of technology index numbers. The index numbers are included in the cost function and the parameters are being estimated. The estimates show that some technologies affect cost in a positive way, whilst others affect cost in a negative way. The outcomes also show that technology change is non-neutral and output biased.

Chapter 7 begins with a consideration of the theories that seek to explain differences in performance associated with variations in the ownership of hospitals in the United States. This is followed by a review of the literature of empirical studies that have examined the impact of ownership on hospital efficiency. While this section emphasizes frontier studies, corroborating evidence from studies that used ordinary least squares (OLS) methods are also included. Our review found very mixed evidence about the impact of ownership status on efficiency. Next, we discuss the methods of the study. A panel of 869 hospitals that reported complete data from 1999 to 2002 was used. Stochastic frontier analysis (SFA), using a simultaneous estimation procedure for panel data, was employed. Choices regarding the form of the cost function, assumptions about the distribution of the error component that represents inefficiency, the appropriateness of using SFA vis-à-vis OLS, and the use of inefficiency effects variables were guided by the results of formal hypothesis tests. In the results section, we report that the mean estimated cost-inefficiency of for-profit hospitals was 8.6%. In contrast, the mean values for non-profit and government hospitals were 11.3% and 25.8%, respectively. This concurs with expectations derived from Property Rights Theory. Consistent with previous SFA studies, our results found that environmental factors, such as hospital competition, managed care penetration and public payer mix affect hospital cost-inefficiency.

Chapter 8 focuses on market concentration in hospital industry. Hospital markets have become highly concentrated due to increasing numbers of mergers and acquisitions. These consolidations in hospital markets may have anticompetitive or procompetitive effects due to increasing market power, economies of scale and scope and quality consequences. In this chapter, market competition and concentration and their antitrust implications in hospital markets are examined. After a brief summary of recent changes in hospital markets, the chapter focuses on the relevant economics literature on price, cost and quality consequences of market concentration,

and their implications and connections with the merger guidelines and antitrust policies.

Chapter 9 sheds light on the welfare consequences of public hospitals. Public hospitals enhance social welfare by serving as “safety net” hospitals, providing trauma care, and training medical personnel. Nonetheless, critics of public hospitals argue that they are inefficient and that social welfare would be improved if public hospitals were closed and their workload transferred to private hospitals. Here we deal with the subject in two ways. First, we directly compare the efficiency and productivity of public vs. private hospitals. Second, we examine an indirect effect of public hospitals by comparing the performance of private hospitals operating in markets with and without a public hospital presence. The latter issue is important because public hospitals may generate a positive “spillover” for neighboring private hospitals through their provision of “social goods,” which would lighten the burden for private hospitals particularly in terms of providing charity care. Finally, we examine whether the proportion of uninsured people in a community affects hospital productivity by diverting resources to uncompensated care. Data envelopment analysis (DEA) is used to measure efficiency and construct the Malmquist productivity index and its components in order to address the issues noted above. Using annual data covering general, acute care hospitals operating in major US urban areas over the period 1994–2002, we failed to find significant evidence of performance differences between public and private hospitals, suggesting that welfare would not be enhanced if hospital care were shifted from public to private providers. We also failed to find evidence of any positive spillovers associated with public hospitals – the performances of private hospitals with and without a public hospital presence were similar. Finally, with few exceptions, a higher proportion of uninsured people did not appear to have a significant effect on hospital productivity.

Chapter 10 discusses that since 1998, all major hospitals in Finland have been participating in a voluntary benchmarking project based on comprehensive and continuous data collection from patient records and cost accounts. The aim of this chapter is to describe how the national hospital benchmarking system (BMS) was implemented, focusing on the use of BMS for managerial purposes and its impact on hospital care productivity. Descriptions of the characteristics of different phases in the development and use of the BMS are provided. Finally, important issues and potential problems in the use of productivity and efficiency benchmarking are discussed and future solutions are suggested.

Chapter 11 examines the aim, structure, operation and health care efficiency-related activities of the Productivity Commission of Australia, and sheds light on how such a mechanism can influence broader policy and funding patterns. The benefits and constraints of the mechanism are considered, and the chapter concludes with a discussion of the potential use and impacts of such a mechanism in other countries.

The purpose of Chapter 12 is to find the optimal allocation of resources across two surgery strategies procedures. The two strategies are: immediately sequential cataract surgery which is defined as surgery on both eyes at once. The other strategy is dubbed delayed sequential cataract surgery, which entails surgery on one eye and then surgery on second eye 2–3 month later. The method used here includes two steps: measuring changes in health and daily life activities, i.e., estimating a capability index and second, finding the optimal allocation of resources across the two strategies, based on the estimated capability index and cost of treatment. In the capability approach health in terms of anatomic and mental conditions of the body is related to the patient's ability to pursue daily life activities, using an index approach. In contrast to many other approaches the success of a medical treatment includes both health and quality of life aspects. The index approach requires data on eye characteristics including visual acuity, left and right eye – contrast vision, and self assessed frequency of daily life activities related to vision. These daily life activities comprise the outcomes of the surgery such as reading, walking, watching television, as well as more subjective, self-assessed difficulties with daily life activities related to vision.

Even though hospitals do not operate in a competitive market, there are lessons to be learned from the economic literature to improve performance. In Chapter 13, we review the methodological approach described by Balk in Chapter 2 and the necessity of appropriate data from Burgess in Chapter 3. Echoing the concerns of Burgess, benchmarking promotes such data collection and utilization among policy makers and managers. Market factors such as hospital organization, market influences, and geographical location and ownership are also assessed revealing that there does not exist a single magic bullet that could eliminate or explain all deviations from optimizing hospital performance. We close this chapter with concluding remarks calling for not only economic indicators of performance but quality and access as well.