

Two-Stage Hospital Efficiency Analysis Including Qualitative Evidence: A Greek Case

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Abstract : Background: Policy makers, professional organizations and payers have introduced a variety of initiatives and reforms for the health systems worldwide, aimed at improving hospital efficiency. Their efforts are concentrated in two main categories: to constrain increasing healthcare costs and to enhance quality of services provided. Research Objectives: This study examines the efficiency of 112 Greek public hospitals for the year 2009, evaluates the importance of bootstrapping techniques and investigates the effect of contextual factors on hospital efficiency. Furthermore, the effect of qualitative evidence, on hospital efficiency is explored using data from 28 large hospitals. Methods: We applied Data Envelopment Analysis, augmented by bootstrapping techniques, to estimate efficiency scores. In order to measure the effect of environmental factors on hospital efficiency we used Tobit regression analysis. The significance of our models is evaluated using statistical tests to compare distributions. Results: The Kolmogorov-Smirnov test between the original and the bootstrap-corrected efficiency indicates that their distributions are significantly different (p -value <0.01). The environmental factors, that seem to influence efficiency, are Occupancy Rating and the ratio between Outpatient Visits and Inpatient Days. Results indicate that the inclusion of the quality variable in DEA modelling generates statistically significant variations in efficiency scores (p -value <0.05). Conclusions: The inclusion of quality variables and the use of bootstrap resampling in efficiency analysis impose a statistically significant effect on the distribution of efficiency scores. As a policy conclusion we highlight the importance of these methods on hospital efficiency analysis and, by implication, on healthcare resource allocation.

Keywords : hospitals, efficiency, quality, data envelopment analysis, Greek public hospital sector

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