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Hospital Cost Efficiency in Portugal: A Frontier Analysis of Panel Data

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Objectivos (Objectives):

There is broad consensus about the lack of efficiency of Portugal public hospitals. The general belief is that Portugal public hospitals do not spend the resources made available as properly as they should. The main purpose of this paper is to determine a best practice cost for each public hospital which could then be used as a benchmark so as to find out how much savings each hospital can indeed aim to arrive at whilst producing its actual amount of output, or likewise but the other way around, how much extra output each hospital can aim to arrive at whilst spending its observed actual amount of expense.

The correctness of the computed best practice cost is of major importance as it may influence policy decisions. Although in recent years more and more researchers have relied on stochastic frontier estimation, estimates may be sensitive to heteroscedasticity and to the distribution one chooses for the cost inefficiency term. A further objective of this paper is to address those aspects which may strongly influence the results so that one can be assured enough about the reliability of the conclusions.

The national health authorities have undertaken several restructuring measures starting in year 2002 or so with the intention that efficiency could be improved. A number of public hospitals were changed into incorporated companies so that they could benefit from similar running and legal tools as private hospitals benefit from every day, plus a number of public hospitals were merged into others. A secondary objective of this paper is at last to assess whether or not the reforms have had the wanted impact on efficiency.

Metodologia (Methodology):

This paper estimates the best practice cost function and measures cost efficiency for a panel of 63 mainland Portugal public hospitals over the five-year period from 2002 to 2006 first by means of standard stochastic cost frontier estimation which is then put faced up to a number of modelling alternatives. Specifically, as standard stochastic cost frontier estimation assumes homoscedasticity, the paper investigates how much the results differ when opposing standard stochastic cost frontier estimation to a corrected random effects (CRE) cost frontier procedure of our own which assumes heteroscedasticity and requires no distributional assumption on the cost inefficiency term. A Cobb – Douglas form is chosen.

Resultados (Results):

Estimates and efficiency rankings which either come from homoscedasticity or heteroscedasticity are quite dissimilar. Under homoscedasticity, the frontier unit cost of inpatient care of the Cova da Beira hospital centre is 2,759 Euros and its daily equivalent is 348 Euros. Under heteroscedasticity, its frontier unit cost of inpatient care becomes 2,836

Euros and its daily equivalent happens to be 357 Euros. Under homoscedasticity, the Portuguese NHS taken as a whole can attain a cost reduction of up to 11% with no cuts whatsoever in production, or equivalently a potential increase of inpatient care of up to 24% per year at the actual expense. The percentages rise respectively to 17% and 35% under heteroscedasticity. A likelihood-ratio test favours heteroscedasticity.

There is statistically no evidence that the legal conversion of public hospitals into incorporated companies or the merger of hospitals have any impact on costs.

Conclusões (Conclusions):

Either estimates under homoscedasticity are biased when in fact the variance evolves across hospitals or including heteroscedasticity whilst there is none seems to enormously puzzle the conclusions. The CRE cost frontier model should perhaps be the most appropriate.

It should be expected that the reforms which have been undertaken so far would have roughly no impact on costs as there is still no incentive mechanism which would motivate the hospitals to become more efficient - that is, either to produce more for a given amount of money or to spend less for a given amount of output.