به‌نام خدای بخشاینده مهربان

In the name of Allah, the Beneficent, the Merciful.

Health Policy

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The impact of new public management on efficiency: An analysis of Madrid's hospitals

Impact Factor: 1.097

5-Year Impact Factor: 2.070

Introduction

- NPM:1980
- This paper focuses on the reform of hospitals belonging to the Madrid Regional Health Service(SERMAS)
- implemented the use of new hospital management formulas, through the implementation of **purchaser/provider** split, use of **PPPs**, **contracting out** and the introduction of **competition** between hospitals.

Introduction

NPM techniques would increase efficiency in the health care sector, by introducing criteria from private sector management into traditional methods of public administration.

New hospital management models

2 maine action:

1. introduction of market-driven mechanisms through the separation of purchaser and provider
2. contracting out some or all hospital services.

New hospital management models

Table 1
Main characteristics of SERMAS hospitals.

Type of model	Name	Service delivery	Legal subjection	Staff management
Administrative direct management	Clinic unit with no legal status (traditional managed hospital)	Public (direct)	Public law	Statutory regime
New management model	Public enterprise	Public (direct)	Private law	Labor legislation**
New management model	Foundation	Public (direct)	Private law	Labor legislation
New management model	Contracting	Private (indirect)	Private law	Labor legislation
New management model	PFI	Mixed* (indirect)	Private law	Labor legislation
New management model	"*Alzira*" model	Private (indirect)	Private law	Labor legislation

STROBE Statement—Checklist

1. Title and abstract

☑ indicate the study's design with a commonly used term in the title or the abstract

☑ Provide in the abstract an informative and balanced summary of what was done and what was found

2.Introduction

Background

☑ **Explain the scientific background and rationale for the investigation being report**

- ✓ Explain about the NPM background
- ✓ What is already known about the topic
- ✓ What this paper adds

2.Introduction

Background

And that:

this is the first study to analyze efficiency differences between traditionally managed hospitals and those ones operating under new management formulas in Madrid.

2.Introduction
Objectives

☑ State specific objectives, including any prespecified hypotheses

- **The central aim of this paper is to evaluate whether the NPM reforms implemented in the SERMAS hospitals' network are indeed associated with efficiency gains.**
- **comparative analysis between ADM and NMM in 2009**
- **assess the relative hospitals' efficiency by DEA and DEA-bootstrap approache**

3.Methods
study design

☑ Present key elements of study design early in the paper

3.Methods
Setting

☑ Describe the setting, locations, and relevant dates, including periods of recruitment, exposure, follow-up, and data collection

Data and location : obtained from the Spanish Hospital Survey for the year 2009, and data provided by the Ministry of Health of the Community of Madrid.

3.Methods

Participants

☑Give the eligibility criteria, and the sources and methods of selection of participants

- In 2009, there were 33 hospitals belonging to the SERMAS.
- excluded psychiatric, children, geriatrics and long stay hospitals, in order to work with a relatively homogeneous sample, which is crucial in a DEA.
- Final 25 hospital: 11 NMM nad 14 ADM

3.Methods

Variables, Data sources/measurement and Quantitative variables

☑ **Clearly define all outcomes, exposures, predictors, potential confounders, and effect modifiers. Give diagnostic criteria, if applicable**

Input:beds,Doctors,Nurses

Output:Discharges,outpatient

Undesirable outputs: Mortality Rate, Readmission rate

3.Methods

Statistical methods, measurement

DEA Model:

1. **Orientation: input orientation**
2. **returns to scale assumption:variable returns to scale (VRS).**
3. **lackof statistical basis: employ the DEA homogeneous bootstrap methods described in Simar and Wilson.**

3.Methods

Statistical methods

A non-parametric Mann–Whitney U test and an analysis of bootstrapped average efficiency confidence intervals computed on the previous stage.

3.Methods

Table 2
Different DEA models.

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
Inputs							
Beds	x	x	x	x	x	x	x
Doctors	x	x	x	x	x	x	x
Nursing	x	x	x	x	x	x	x
Outputs							
Discharges	x	x	x	x	x	x	x
Outpatients	x	x	x	x	x	x	x
Undesirable outputs							
Mortality rate		x	x			x	x
Readmission rate				x	x	x	x

Notes: Model 1 ignores undesirable outputs. Models 2, 4 and 6 treat undesirable outputs as normal inputs. Models 3, 5 and 7 use a linear transformation to deal with undesirable outputs.

4.Results

DEA efficiency scores.

DMU	Model 1		Model 2		Model 3		Model 4		Model 5		Model 6		Model 7	
	β_i	bias β_i	β_i	bias β_i	β_i	bias β_i	β_i	bias β_i	β_i	bias β_i	β_i	bias β_i	β_i	bias β_i
1(a)	0.8657	0.7940	0.8657	0.8084	0.8657	0.8037	0.8657	0.8022	0.8657	0.7983	0.8657	0.8114	0.8657	0.8043
2(a)	0.7711	0.7027	0.8599	0.8011	0.7893	0.7183	0.7849	0.7150	0.7711	0.7049	0.8599	0.8022	0.7893	0.7190
3(a)	1.0000	0.8950	1.0000	0.9143	1.0000	0.9046	1.0000	0.9051	1.0000	0.8993	1.0000	0.9166	1.0000	0.9061
4(a)	0.7576	0.6949	0.7648	0.7049	0.7576	0.6998	0.7620	0.7014	0.7576	0.6990	0.7656	0.7067	0.7576	0.6994
5(a)	1.0000	0.9246	1.0000	0.9340	1.0000	0.9282	1.0000	0.9287	1.0000	0.9100	1.0000	0.9344	1.0000	0.9143
6(b)	1.0000	0.8951	1.0000	0.9142	1.0000	0.9058	1.0000	0.9038	1.0000	0.9002	1.0000	0.9168	1.0000	0.9061
7(a)	0.9479	0.9131	0.9500	0.9080	0.9498	0.9018	0.9479	0.9110	0.9479	0.9131	0.9500	0.9072	0.9498	0.9020
8(c)	0.9081	0.8504	0.9088	0.8608	0.9085	0.8571	0.9118	0.8582	0.9081	0.8516	0.9119	0.8648	0.9085	0.8556
9(a)	0.8269	0.7812	0.8280	0.7890	0.8271	0.7849	0.8296	0.7831	0.8269	0.7831	0.8296	0.7866	0.8271	0.7844
10(a)	0.8353	0.7720	0.8361	0.7845	0.8353	0.7783	0.8841	0.8191	0.8488	0.7810	0.8841	0.8271	0.8488	0.7855
11(d)	1.0000	0.9135	1.0000	0.9270	1.0000	0.9192	1.0000	0.9205	1.0000	0.9175	1.0000	0.9287	1.0000	0.9200
12(a)	0.7232	0.6871	0.7628	0.7109	0.7259	0.6774	0.7316	0.6911	0.7232	0.6864	0.7646	0.7130	0.7259	0.6771
13(a)	0.8543	0.7860	0.8804	0.8253	0.8648	0.8006	0.8543	0.7880	0.8543	0.7872	0.8804	0.8256	0.8648	0.8005
14(e)	0.8942	0.8507	0.9091	0.8633	0.9060	0.8568	0.8964	0.8510	0.8942	0.8505	0.9130	0.8684	0.9060	0.8563
15(c)	0.7612	0.6907	0.8063	0.7435	0.7836	0.7190	0.7937	0.7219	0.7710	0.7001	0.8063	0.7442	0.7836	0.7176
16(c)	0.9420	0.8906	1.0000	0.9446	1.0000	0.9246	0.9555	0.9097	0.9458	0.8942	1.0000	0.9450	1.0000	0.9246
17(c)	0.9912	0.9547	1.0000	0.9304	1.0000	0.9207	0.9912	0.9530	0.9912	0.9537	1.0000	0.9318	1.0000	0.9206
18(c)	0.8974	0.8398	0.9545	0.9075	0.9456	0.8907	0.8991	0.8427	0.8974	0.8397	0.9545	0.9086	0.9456	0.8911
19(a)	0.8763	0.8180	1.0000	0.9382	1.0000	0.9285	1.0000	0.9117	1.0000	0.8992	1.0000	0.9216	1.0000	0.9050
20(a)	0.9196	0.8490	1.0000	0.9457	1.0000	0.9370	1.0000	0.9282	1.0000	0.9187	1.0000	0.9359	1.0000	0.9244
21(c)	0.9017	0.8353	0.9683	0.9226	0.9623	0.9078	0.9291	0.8768	0.9138	0.8542	0.9683	0.9245	0.9623	0.9080
22(f)	1.0000	0.8951	1.0000	0.9147	1.0000	0.9054	1.0000	0.9062	1.0000	0.9002	1.0000	0.9162	1.0000	0.9047
23(a)	1.0000	0.9117	1.0000	0.9145	1.0000	0.9046	1.0000	0.9040	1.0000	0.8986	1.0000	0.9180	1.0000	0.9052
24(c)	0.8978	0.8246	0.9396	0.8856	0.9251	0.8623	0.9099	0.8461	0.8978	0.8288	0.9396	0.8878	0.9251	0.8625
25(a)	1.0000	0.8950	1.0000	0.9157	1.0000	0.9045	1.0000	0.9047	1.0000	0.8997	1.0000	0.9167	1.0000	0.9044

Notes: (a) ADM model; (b) contracted private hospital; (c) PFI model; (d) foundation; (e) public enterprise; (f) PPP – "Alzira" model.

Table 4
Average bootstrap-DEA confidence intervals and Mann–Whitney tests.

		Mean score	95% bootstrapped C.I.		*U* test[a]
Model 1	ADM	0.8160214	0.7671357	0.8804786	−1.314 (0.189)
	NMM	0.8582273	0.8052545	0.9227273	
Model 2	ADM	0.8496071	0.7948	0.9077714	−0.931 (0.352)
	NMM	0.8922	0.8340818	0.9503182	
Model 3	ADM	0.8337286	0.7776071	0.8978286	−0.1095 (0.273)
	NMM	0.8790364	0.8162364	0.9448182	
Model 4	ADM	0.8352357	0.7804571	0.9010429	−0.766 (0.443)
	NMM	0.8718091	0.8169818	0.9317273	
Model 5	ADM	0.8270357	0.7683286	0.8962429	−0.876 (0.381)
	NMM	0.8627909	0.8078909	0.9254364	
Model 6	ADM	0.8516429	0.7957929	0.9115143	−1.204 (0.228)
	NMM	0.8942545	0.8363182	0.9509727	
Model 7	ADM	0.8308286	0.7696429	0.8988143	−1.396 (0.163)
	NMM	0.8788273	0.8165364	0.9449091	

[a] *Z* values for Mann–Whitney test. Test significance in parenthesis.

4.Results

Descriptive Data/outcome data/main result

☑Report numbers of outcome events or summary measures

☑Report other analyses

5.Discussion

Key result/limitation/Interpretation/Generalisability

- ☑ **Summaries key results with reference to study objectives**
- ☑ **Discuss limitations of the study**
- ☑ **Give a cautious overall interpretation of results considering objectives, limitations, multiplicity of analyses, results from similar studies, and other relevant evidence**

5.Discussion

Key result/limitation/Interpretation/Generalisability

- ☑ Discuss the generalize ability (external validity) of the study results
- ☑ Give the source of funding and the role of the funders for the present study and, I applicable, for the original study on which the present article is based

THANK YOU