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0521851440 - Measuring Efficiency in Health Care: Analytic Techniques and Health Policy

Rowena Jacobs, Peter C. Smith and Andrew Street

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Measuring Efficiency in Health Care

With the health care sector accounting for a sizeable proportion of national expenditures, the pursuit of efficiency has become a central objective of policy makers within most health systems. However, the analysis and measurement of efficiency is a complex undertaking, not least because of the multiple objectives of health care organisations and the many gaps in information systems. In response to this complexity, research in organisational efficiency analysis has flourished. This book examines some of the most important techniques currently available to measure the efficiency of systems and organisations, including data envelopment analysis and stochastic frontier analysis, and also presents some promising new methodological approaches. Such techniques offer the prospect of many new and fruitful insights into health care performance. Nevertheless, they also pose many practical and methodological challenges. This is a timely critical assessment of the strengths and limitations of efficiency analysis applied to health and health care.

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Preface

In response to the sizeable proportion of national income devoted to the health care sector, policy makers in most high-income countries have become increasingly concerned with improving the efficiency of the health care sector. Meanwhile, econometricians, statisticians and management scientists have been developing increasingly sophisticated tools that seek to measure organisational efficiency. The question therefore arises: do these techniques offer policy makers useful tools with which to assess and regulate health care performance?

In collaboration with colleagues at the Centre for Health Economics and elsewhere, we have been involved in many studies seeking to address that question, and this book summarises our experience to date. As the reader will see, our findings are equivocal. We find much of value in the techniques of efficiency analysis, not least their rigour and the insights they give into complex data sets. These virtues deserve to be acknowledged. However, we also identify some important intellectual weaknesses and practical difficulties associated with implementing the techniques in health care, and we view with concern the claims made for them by some of their more ardent advocates.

This book therefore seeks to offer a balanced critique of the current state of the art of efficiency analysis as applied to health care. The intention is to offer analysts and policy makers a coherent view of the strengths and limitations of the techniques, both from a technical and a policy perspective. We assume the reader is comfortable with rudimentary mathematical exposition, but otherwise assume no familiarity with the analytic material. The breadth of the intended readership has nevertheless presented us with some challenges in choosing the level of technical detail to include in the exposition, and the chapters emphasise the technical and policy issues to different extents.

Chapters 1 and 2 offer a general introduction to the context and principles underlying the development of efficiency analysis, and should be accessible to all our intended readership. The core of the

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technical exposition is contained in chapters 3 and 4 (stochastic frontier analysis (SFA)) and chapters 5 and 6 (data envelopment analysis (DEA)). They are intended to stand on their own if the reader is interested in only one of the analytic approaches.

Chapter 7 offers a less technical comparison of the two techniques, and chapter 8, an assessment of their major weaknesses from a policy perspective. In the light of some of the concerns we raise, we present some tentative proposals for complementary analytic approaches in chapter 9. Finally, chapter 10 summarises what we feel is the current ‘state of the art’, emphasising our concern that – notwithstanding the need for good quantitative evidence – effective regulation of health care will always require a balanced range of analytic approaches.

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A&E	Accident and Emergency
AE	allocative efficiency
B&C	Battese and Coelli model
BCC	Banker, Charnes and Cooper model
COLS	corrected ordinary least squares
CRS	constant returns to scale
DEA	data envelopment analysis
DMU	decision-making unit
DRG	diagnosis-related group
EE	economic efficiency
EQ5D	EuroQol five-dimensional health survey instrument
FE	fixed-effects
GDP	gross domestic product
GLS	generalised least squares
HRG	healthcare resource group
ITU	intensive care unit
MFF	market forces factor
ML	multilevel
MLE	maximum likelihood estimation
MVML	multivariate multilevel
NHS	National Health Service
NIRS	non-increasing returns to scale
OECD	Organisation for Economic Co-operation and Development
OFWAT	Office of Water Services
OLS	ordinary least squares
P&L	Pitt and Lee RE model
RE	random-effects
S&S	Schmidt and Sickles FE model
SE	scale efficiency
SF	stochastic frontier
SF36	Short Form 36 health survey instrument

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List of abbreviations

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SFA	stochastic frontier analysis
SUR	seemingly unrelated regression
T&O	Trauma and Orthopaedics
TE	technical efficiency
TFP	total factor productivity
UK	United Kingdom
VRS	variable returns to scale
WHO	World Health Organization