

Efficiency Analysis By Production Frontiers Pkicertore

The volume examines the state-of-the-art of productivity and efficiency analysis. It brings together a selection of the best papers from the 10th North American Productivity Workshop. By analyzing world-wide perspectives on challenges that local economies and institutions may face when changes in productivity are observed, readers can quickly assess the impact of productivity measurement, productivity growth, dynamics of productivity change, measures of labor productivity, measures of technical efficiency in different sectors, frontier analysis, measures of performance, industry instability and spillover effects. The contributions in this volume focus on the theory and application of economics, econometrics, statistics, management science and operational research related to problems in the areas of productivity and efficiency measurement. Popular techniques and methodologies including stochastic frontier analysis and data envelopment analysis are represented. Chapters also cover broader issues related to measuring, understanding, incentivizing and improving the productivity and performance of firms, public services, and industries.

This volume systematically details both the basic principles and new developments in Data Envelopment Analysis (DEA), offering a solid understanding of the methodology, its uses, and its potential. New material in this edition includes coverage of recent developments that have greatly extended the power and scope of DEA and have lead to new directions for research and DEA uses. Each chapter accompanies its developments with simple numerical examples

Bookmark File PDF Efficiency Analysis By Production Frontiers Pkicertore

and discussions of actual applications. The first nine chapters cover the basic principles of DEA, while the final seven chapters provide a more advanced treatment.

A Practitioner's Guide to Stochastic Frontier Analysis Using Stata provides practitioners in academia and industry with a step-by-step guide on how to conduct efficiency analysis using the stochastic frontier approach. The authors explain in detail how to estimate production, cost, and profit efficiency and introduce the basic theory of each model in an accessible way, using empirical examples that demonstrate the interpretation and application of models. This book also provides computer code, allowing users to apply the models in their own work, and incorporates the most recent stochastic frontier models developed in academic literature. Such recent developments include models of heteroscedasticity and exogenous determinants of inefficiency, scaling models, panel models with time-varying inefficiency, growth models, and panel models that separate firm effects and persistent and transient inefficiency. Immensely helpful to applied researchers, this book bridges the chasm between theory and practice, expanding the range of applications in which production frontier analysis may be implemented. New efficiency theory refers to the various parametric and semi-parametric methods of estimating production and cost frontiers, which include data envelopment analysis (DEA) with its diverse applications in management science and operations research. This monograph develops and generalizes the new efficiency theory by highlighting the interface between economic theory and operations research. Some of the outstanding features of this monograph are: (1) integrating the theory of firm efficiency and industry equilibrium, (2) emphasizing growth efficiency in a dynamic setting, (3) incorporating uncertainty of market demand and prices, and (4) the implications of group efficiency by sharing investments. Applications discuss

Bookmark File PDF Efficiency Analysis By Production Frontiers Pkicertore

in some detail the growth and decline of the US computer industry, and the relative performance of mutual fund portfolios.

In this book the authors explore the state of the art on efficiency measurement in health systems and international experts offer insights into the pitfalls and potential associated with various measurement techniques. The authors show that: - The core idea of efficiency is easy to understand in principle - maximizing valued outputs relative to inputs, but is often difficult to make operational in real-life situations - There have been numerous advances in data collection and availability, as well as innovative methodological approaches that give valuable insights into how efficiently health care is delivered - Our simple analytical framework can facilitate the development and interpretation of efficiency indicators.

Efficiency Analysis by Production Frontiers The Nonparametric Approach Springer Science & Business Media

This work focuses on measuring and explaining producer performance. The authors view performance as a function of the state of technology and economic efficiency, with the former defining a frontier relation between inputs and outputs; the former incorporating waste and misallocation relative to this frontier. They show that insights can be gained by allowing for the possibility of a divergence between the economic objective and actual performance, and by associating this inefficiency with causal variables subject to managerial or policy influence. Derived from a series of lectures held on techniques and applications of the three approaches to the construction of production frontiers and measure of efficiency, this work will be an essential reference to scholars of a variety of disciplines who are involved with quantitative methods or policy.

Data envelopment analysis develops a set of nonparametric and semiparametric techniques for measuring economic efficiency among firms and nonprofit organizations. Over the past decade this technique has found most widespread applications in public sector organizations. However these applications have been mostly static. This monograph extends this static framework of efficiency analysis in several new directions. These include but are not limited to the following: (1) a dynamic view of the production and cost frontier, where capital inputs are treated differently from the current inputs, (2) a direct role of the technological progress and regress, which is so often stressed in total factor productivity discussion in modern growth theory in economics, (3) stochastic efficiency in a dynamic setting, where reliability improvement competes with technical efficiency, (4) flexible manufacturing systems, where flexibility of the production process and the economies of scope play an important role in efficiency analysis and (5) the role of economic factors such as externalities and input interdependences. Efficiency is viewed here in the framework of a general systems theory model. Such a view is intended to broaden the scope of applications of this promising new technique of data envelopment analysis. The monograph stresses the various applied aspects of the dynamic theory, so that it can be empirically implemented in different situations. As far as possible abstract

mathematical treatments are avoided and emphasis placed on the statistical examples and empirical illustrations.

This book provides a coherent description of the main concepts and statistical methods used to analyse economic performance. The focus is on measures of performance that are of practical relevance to policy makers. Most, if not all, of these measures can be viewed as measures of productivity and/or efficiency. Linking fields as diverse as index number theory, data envelopment analysis and stochastic frontier analysis, the book explains how to compute measures of input and output quantity change that are consistent with measurement theory. It then discusses ways in which meaningful measures of productivity change can be decomposed into measures of technical progress, environmental change, and different types of efficiency change. The book is aimed at graduate students, researchers, statisticians, accountants and economists working in universities, regulatory authorities, government departments and private firms. The book contains many numerical examples. Computer codes and datasets are available on a companion website.

The aim of this volume is to provide a general overview of the econometrics of panel data, both from a theoretical and from an applied viewpoint. Since the pioneering papers by Edwin Kuh (1959), Yair Mundlak (1961), Irving Hoch

(1962), and Pietro Balestra and Marc Nerlove (1966), the pooling of cross sections and time series data has become an increasingly popular way of quantifying economic relationships. Each series provides information lacking in the other, so a combination of both leads to more accurate and reliable results than would be achievable by one type of series alone. Over the last 30 years much work has been done: investigation of the properties of the applied estimators and test statistics, analysis of dynamic models and the effects of eventual measurement errors, etc. These are just some of the problems addressed by this work. In addition, some specific difficulties associated with the use of panel data, such as attrition, heterogeneity, selectivity bias, pseudo panels etc., have also been explored. The first objective of this book, which takes up Parts I and II, is to give as complete and up-to-date a presentation of these theoretical developments as possible. Part I is concerned with classical linear models and their extensions; Part II deals with nonlinear models and related issues: logit and probit models, latent variable models, duration and count data models, incomplete panels and selectivity bias, point processes, and simulation techniques.

Efficiency Analysis details the important econometric area of efficiency estimation, both past approaches as well as new methodology. There are two

main camps in efficiency analysis: that which estimates maximal output and attributes all departures from this as inefficiency, known as Data Envelopment Analysis (DEA), and that which allows for both unobserved variation in output due to shocks and measurement error as well as inefficiency, known as Stochastic Frontier Analysis (SFA). This volume focuses exclusively on SFA. The econometric study of efficiency analysis typically begins by constructing a convoluted error term that is composed on noise, shocks, measurement error, and a one-sided shock called inefficiency. Early in the development of these methods, attention focused on the proposal of distributional assumptions which yielded a likelihood function whereby the parameters of the distributional components of the convoluted error could be recovered. The field evolved to the study of individual specific efficiency scores and the extension of these methods to panel data. Recently, attention has focused on relaxing the stringent distributional assumptions that are commonly imposed, relaxing the functional form assumptions commonly placed on the underlying technology, or some combination of both. All told exciting and seminal breakthroughs have occurred in this literature, and reviews of these methods are needed to effectively detail the state of the art. The generality of SFA is such that the study of efficiency has gone beyond simple application of frontier methods to study firms and appears

across a diverse set of applied milieus. This review should appeal to those outside of the efficiency literature seeking to learn about new methods which might assist them in uncovering phenomena in their applied area of interest. This restructured, updated Third Edition provides a general overview of the econometrics of panel data, from both theoretical and applied viewpoints. Readers discover how econometric tools are used to study organizational and household behaviors as well as other macroeconomic phenomena such as economic growth. The book contains sixteen entirely new chapters; all other chapters have been revised to account for recent developments. With contributions from well known specialists in the field, this handbook is a standard reference for all those involved in the use of panel data in econometrics. When Harold Fried, et al. published *The Measurement of Productive Efficiency: Techniques and Applications* with OUP in 1993, the book received a great deal of professional interest for its accessible treatment of the rapidly growing field of efficiency and productivity analysis. The first several chapters, providing the background, motivation, and theoretical foundations for this topic, were the most widely recognized. In this tight, direct update, these same editors have compiled over ten years of the most recent research in this changing field, and expanded on those seminal chapters. The book will guide readers from the basic models to

the latest, cutting-edge extensions, and will be reinforced by references to classic and current theoretical and applied research. It is intended for professors and graduate students in a variety of fields, ranging from economics to agricultural economics, business administration, management science, and public administration. It should also appeal to public servants and policy makers engaged in business performance analysis or regulation.

Provides a comprehensive approach to productivity and efficiency analysis using economic and econometric theory.

International Applications of Productivity and Efficiency Analysis features a complete range of techniques utilized in frontier analysis, including extensions of existing techniques and the development of new techniques. Another feature is that most of the contributions use panel data in a variety of approaches. Finally, the range of empirical applications is at least as great as the range of techniques, and many of the applications are of considerable policy relevance. This book provides a detailed introduction to the theoretical and methodological foundations of production efficiency analysis using benchmarking. Two of the more popular methods of efficiency evaluation are Stochastic Frontier Analysis (SFA) and Data Envelopment Analysis (DEA), both of which are based on the concept of a production possibility set and its frontier. Depending on the assumed objectives of the decision-making unit, a Production, Cost, or Profit Frontier is constructed from observed data on input and output quantities and prices. While SFA uses different maximum likelihood estimation techniques to estimate a parametric frontier,

Bookmark File PDF Efficiency Analysis By Production Frontiers Pkicertore

DEA relies on mathematical programming to create a nonparametric frontier. Yet another alternative is the Convex Nonparametric Frontier, which is based on the assumed convexity of the production possibility set and creates a piecewise linear frontier consisting of a number of tangent hyper planes. Three of the papers in this volume provide a detailed and relatively easy to follow exposition of the underlying theory from neoclassical production economics and offer step-by-step instructions on the appropriate model to apply in different contexts and how to implement them. Of particular appeal are the instructions on (i) how to write the codes for different SFA models on STATA, (ii) how to write a VBA Macro for repetitive solution of the DEA problem for each production unit on Excel Solver, and (iii) how to write the codes for the Nonparametric Convex Frontier estimation. The three other papers in the volume are primarily theoretical and will be of interest to PhD students and researchers hoping to make methodological and conceptual contributions to the field of nonparametric efficiency analysis. This book surveys the state-of-the-art in efficiency and productivity analysis, examining advances in the analytical foundations and empirical applications. The analytical techniques developed in this book for efficiency provide alternative ways of defining optimum outcome sets, typically as a (technical) production frontier or as an (economic) cost, revenue or profit frontier, and alternative ways of measuring efficiency relative to an appropriate frontier. Simultaneously, the analytical techniques developed for efficiency analysis extend directly to productivity analysis, thereby providing alternative methods for estimating productivity levels, and productivity change through time or productivity variation across producers. This book includes chapters using data envelopment analysis (DEA) or stochastic frontier analysis (SFA) as quantitative techniques capable of measuring efficiency and productivity. Across the book's

Bookmark File PDF Efficiency Analysis By Production Frontiers Pkicertore

15 chapters, it broadly extends into popular application areas including agriculture, banking and finance, and municipal performance, and relatively new application areas including corporate social responsibility, the value of intangible assets, land consolidation, and the measurement of economic well-being. The chapters also cover topics such as permutation tests for production frontier shifts, new indices of total factor productivity, and also randomized controlled trials and production frontiers.

Modern textbook presentations of production economics typically treat producers as successful optimizers. Conventional econometric practice has generally followed this paradigm, and least squares based regression techniques have been used to estimate production, cost, profit and other functions. In such a framework deviations from maximum output, from minimum cost and cost minimizing input demands, and from maximum profit and profit maximizing output supplies and input demands, are attributed exclusively to random statistical noise. However casual empiricism and the business press both make persuasive cases for the argument that, although producers may indeed attempt to optimize, they do not always succeed. This book develops econometric techniques for the estimation of production, cost and profit frontiers, and for the estimation of the technical and economic efficiency with which producers approach these frontiers. Since these frontiers envelop rather than intersect the data, and since the authors continue to maintain the traditional econometric belief in the presence of external forces contributing to random statistical noise, the work is titled Stochastic Frontier Analysis. This book presents a mathematical programming approach to the analysis of production frontiers and efficiency measurement. The authors construct a variety of production frontiers, and by measuring distances to them are able to develop a model of efficient producer

behaviour and a taxonomy of possible types of departure from efficiency in various environments. Linear programming is used as an analytical and computational technique in order to accomplish this. The approach developed is then applied to modelling producer behaviour. By focusing on the empirical relevance of production frontiers and distances to them, and applying linear programming techniques to artificial data to illustrate the type of information they can generate, this book provides a unique study in applied production analysis. It will be of interest to scholars and students of economics and operations research, and analysts in business and government.

The editors draw on a 3-year project that analyzed a Portuguese area in detail, comparing this study with papers from other regions. Applications include the estimation of technical efficiency in agricultural grazing systems (dairy, beef and mixed) and specifically for dairy farms. The conclusions indicate that it is now necessary to help small dairy farms in order to make them more efficient. These results can be compared with the technical efficiency of a sample of Spanish dairy processing firms presented by Magdalena Kapelko and co-authors.

Stochastic Frontier Analysis Using Stata provides practitioners in academia and industry with a step-by-step guide on how to conduct efficiency analysis using the stochastic frontier approach. The authors explain in detail how to estimate production, cost, and profit efficiency and introduce the basic theory of each model in an accessible way, using empirical examples that demonstrate the interpretation and application of models. This book also provides computer code, allowing users to apply the models in their own work, and incorporates the most recent stochastic frontier models developed in academic literature. Such recent developments include models of heteroscedasticity and exogenous determinants of

Bookmark File PDF Efficiency Analysis By Production Frontiers Pkicertore

inefficiency, scaling models, panel models with time-varying inefficiency, growth models, and panel models that separate firm effects and persistent and transient inefficiency. Immensely helpful to applied researchers, this book bridges the chasm between theory and practice, expanding the range of applications in which production frontier analysis may be implemented. This textbook introduces essential topics and techniques in production and efficiency analysis and shows how to apply these methods using the statistical software R. Numerous small simulations lead to a deeper understanding of random processes assumed in the models and of the behavior of estimation techniques. Step-by-step programming provides an understanding of advanced approaches such as stochastic frontier analysis and stochastic data envelopment analysis. The text is intended for master students interested in empirical production and efficiency analysis. Readers are assumed to have a general background in production economics and econometrics, typically taught in introductory microeconomics and econometrics courses.

This book focuses on the application of Data Envelopment Analysis (DEA) to Major League Baseball (MLB). DEA is a nonparametric linear programming model that is used across academic disciplines. In sports economics, authors have applied the technique primarily to assess team and/or managerial efficiency. The basis for performance analysis is economic production theory, where it is assumed that baseball can be viewed as a production process whereby inputs (player quality measures) are transformed into outputs (wins, attendance). The primary advantage that DEA has over more traditional regression based approaches is the ability to handle multiple inputs and multiple outputs. Further, the approach is nonparametric and hence, does not require a priori specification of the production function. The book

Bookmark File PDF Efficiency Analysis By Production Frontiers Pkicertore

develops the theory of DEA in the context of a production environment. A focal point is the assessment of technical and cost efficiency of MLB teams. It is shown that previous frontier applications that measure efficiency provide biased results given that the outcome of a game is zero-sum. If a team loses a game due to inefficiency, another team wins a lost game. A corrected frontier is presented to overcome this problem. Free agent salary arbitration is analyzed using a dual DEA model. Each free agent's contract zone is identified. The upper and lower bounds, representing the player's and team's perspective of value, respectively, are estimated. Player performance is estimated using a modified DEA model to rank order players based on multiple attributes. This model will be used to evaluate current Hall of Fame players. We provide arguments for other players who are deserving of membership. We also use our measure of performance and evaluate age-performance profilers for many ball players. Regression analysis is used to identify the age of peak performance. The method is used to evaluate some of the all-time greats. We also use the method to analyze admitted and implicated steroid users. The results clearly show that performance was enhanced. This book will provide appropriate theoretical models with methodological considerations and interesting empirical analyses and is intended to serve academics and practitioners interested in applying DEA to baseball as well as other sports or production processes. >

This book presents a mathematical programming approach to the analysis of production frontiers and efficiency measurement. Using linear programming techniques, the authors construct a variety of production frontiers, and develop a model of efficient producer behavior and a taxonomy of possible types of departure from efficiency in various environments. This book provides a unique study in applied production analysis, and will be of interest to scholars

and students of economics and operations research, and analysts in business and government.

Measuring productive efficiency for nonprofit organizations has posed a great challenge to applied researchers today. The problem has many facets and diverse implications for a number of disciplines such as economics, applied statistics, management science and information theory. This monograph discusses four major areas, which emphasize the applied economic and econometric aspects of the production frontier analysis: A. Stochastic frontier theory, B. Data envelopment analysis, C. Clustering and estimation theory, D. Economic and managerial applications Besides containing an up-to-date survey of the most recent developments in the field, the monograph presents several new results and theorems from my own research. These include but are not limited to the following: (1) interface with parametric theory, (2) minimax and robust concepts of production frontier, (3) game-theoretic extension of the Farrell and Johansen models, (4) optimal clustering techniques for data envelopment analysis and (5) the dynamic and stochastic generalizations of the efficiency frontier at the micro and macro levels. In my research work in this field I have received great support and inspiration from Professor Abraham Charnes of the University of Texas at Austin, who has basically founded the technique of data envelopment analysis, developed it and is still expanding it. My interactions with him have been most fruitful and productive. I am deeply grateful to him. Finally, I must record my deep appreciation to my wife and two children for their loving and enduring support. But for their support this work would not have been completed. This book extends the dynamic and stochastic analysis of economic efficiency by using the recent techniques of data envelopment analysis. New results and applications of these

Bookmark File PDF Efficiency Analysis By Production Frontiers Pkicertore

techniques in numerous areas of economics, finance and management are provided, including treatment of private sector industries, portfolio models in finance, quality control techniques in managerial performance, the role of market competition, policy applications in investment models in finance, risk aversion and efficiency, and technology and innovation. The most up-to-date tools of efficiency analysis developed here will be valuable for students and researchers in operations research, applied management science and applied microeconomics.

Contents: New Efficiency Theory Economics of Efficiency Measurement Efficiency Dynamics Stochastic Efficiency Analysis Industrial Applications Economic Theory and DEA Readership: Students and researchers in applied mathematics, economics, finance, operations research, management and applied statistics. Keywords: Efficiency Measurement; Productivity Growth; Demand Fluctuations and Price Uncertainty; Nonparametric Theory; Data Envelopment Analysis Reviews: "... this book contains a lot of useful material and has the potential to be an effective resource for researchers in DEA ..." Interfaces

This book provides practitioners with a step-by-step guide on how to conduct efficiency analysis using the stochastic frontier approach.

Providing a systematic and comprehensive treatment of recent developments in efficiency analysis, this book makes available an intuitive yet rigorous presentation of advanced nonparametric and robust methods, with applications for the analysis of economies of scale and scope, trade-offs in production and service activities, and explanations of efficiency differentials.

This book develops econometric techniques for the estimation of production, cost

and profit frontiers, and for the estimation of the technical and economic efficiency with which producers approach these frontiers. Since these frontiers envelop rather than intersect the data, and since the authors continue to maintain the traditional econometric belief in the presence of external forces contributing to random statistical noise, the work is titled Stochastic Frontier Analysis. Hb ISBN (2000): 0-521-48184-8

This book extends the efficiency literature to the case of intertemporal models. First, the authors introduce static network models which serve as building blocks for the intertemporal budgeting models and the dynamic models. Next, the authors devote two chapters to productivity measurements, which are considered as comparative static models. Intertemporal budgeting models and dynamic models are taken up subsequently. Each chapter, except the first, contains empirical applications.

An Introduction to Efficiency and Productivity Analysis is designed as a primer for anyone seeking an authoritative introduction to efficiency and productivity analysis. It is a systematic treatment of four relatively new methodologies in Efficiency/Production Analysis: (a) Least-Squares Econometric Production Models, (b) Total Factor Productivity (TFP) Indices, (c) Data Envelopment Analysis (DEA), and (d) Stochastic Frontiers. Each method is discussed

thoroughly. First, the basic elements of each method are discussed using models to illustrate the method's fundamentals, and, second, the discussion is expanded to treat the extensions and varieties of each method's uses. Finally, one or more case studies are provided as a full illustration of how each methodology can be used. In addition, all four methodologies will be linked in the book's presentation by examining the advantages and disadvantages of each method and the problems to which each method can be most suitably applied. The book offers the first unified text presentation of methods that will be of use to students, researchers and practitioners who work in the growing area of Efficiency/Productivity Analysis. The book also provides detailed advice on computer programs which can be used to calculate the various measures. This involves a number of presentations of computer instructions and output listings for the SHAZAM, TFPIP, DEAP and FRONTIER computer programs. This proceedings volume examines the state-of-the art of productivity and efficiency analysis and adds to the existing research by bringing together a selection of the best papers from the 8th North American Productivity Workshop (NAPW). It also aims to analyze world-wide perspectives on challenges that local economies and institutions may face when changes in productivity are observed. The volume comprises of seventeen papers that deal with productivity

measurement, productivity growth, dynamics of productivity change, measures of labor productivity, measures of technical efficiency in different sectors, frontier analysis, measures of performance, industry instability and spillover effects. These papers are relevant to academia, but also to public and private sectors in terms of the challenges firms, financial institutions, governments and individuals may face when dealing with economic and education related activities that lead to increase or decrease of productivity. The North American Productivity Workshop brings together academic scholars and practitioners in the field of productivity and efficiency analysis from all over the world. It is a four day conference exploring topics related to productivity, production theory and efficiency measurement in economics, management science, operations research, public administration, and related fields. The papers in this volume also address general topics as health, energy, finance, agriculture, utilities, and economic development, among others. The editors are comprised of the 2014 local organizers, program committee members, and celebrated guest conference speakers.

[Copyright: 80eedbb61f2656127d9f9b4bdfafd900](#)