
Editorial

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Biographical notes: Dr. Meryem Duygun Fethi is a Lecturer of Finance and the Director of the Efficiency and Productivity Research Unit at the University of Leicester School of Management, Leicester, UK. She is the Coordinator of the Association of European Operational Research Societies (EURO) Working Group on Efficiency and Productivity Analysis and the UK Efficiency and Productivity Analysis Network (UKEPAN). Her major research fields are efficiency and productivity analysis, economics of industry and small island economies.

Dr. Vania Sena is currently a Senior Lecturer in Economics at the Aston Business School, Aston University, UK. She has previously worked as a Lecturer in Economics at the Leeds University Business School (LUBS), University of Leeds. Her first degree was awarded with honours by the University of Naples, Federico II, Naples, Italy. Her postgraduate studies in Economics were carried out at the University of York, UK, where she was awarded the MSc and DPhil degrees in Economics. Her research focuses mainly on econometric analysis of the determinants of productivity growth, both at the micro and macro levels.

Recent discussions about the sources of productivity and efficiency differentials have pushed forward the debate on efficiency and Total Factor Productivity (TFP) measurement. Once it is agreed that high levels of efficiency and productivity are desirable goals for an economy, then it is important to define and measure them in ways that respect economic theory and, at the same time, provide useful information to both managers and policy-makers. Among the different methods that might be used, those that are based on the notion of the best practice frontier have become very popular. The reasons for their success can be ascribed to two factors. First, they have deep roots in economic theory. Indeed, in this approach, efficiency is measured as the distance from a

best practice frontier (or the boundary of the production possibility set) computed in accordance with the axioms of the production theory. Productivity change is measured as the variation over time of the firm's distance from the frontier and is decomposed into changes in technical efficiency, technical change and change in scale. The first change is measured by how far the firm is from the frontier; the second change, by shifts in the frontier itself and the last change, by the movements of the firm along the production function curvature. Second, the concept of the distance from a standard allows us to operationalise the concepts of inefficiency and TFP. This provides ready-to-use information for decision-makers. Not surprisingly, then, the frontier approach to the measurement of productivity and efficiency has developed into a major academic activity that spans the disciplines of economics, management and business studies, operations research and statistics.

Given the variety of models and methods used by researchers in this area, it is important to keep up contact and awareness of the different approaches used by economists, management scientists, operations researchers, and statisticians. This explains the urge for the creation of a UK based network of academics researching in this field so as to further develop the rapidly growing expertise in the area, as well as to provide a local forum for the growing number of PhD researchers. It is against this background that UK Efficiency and Productivity Analysis Network (UKEPAN) was launched in February 2006 with an inaugural conference held at the EPRU, School of Management, University of Leicester.

The network aims to:

- further develop research and scholarship in the field of efficiency and productivity analysis, particularly the use of mathematical programming and econometric methods in measuring the performance of producers of public services, industrial outputs, and other forms of economic activity
- establish links with other relevant networks
- bring together clusters of researchers in theme areas, in order to exchange the results of ongoing work and develop new research initiatives
- bring the latest developments in the area to the attention of researchers, and to bring the latest research results to those in the policy-making process
- stimulate PhD research in efficiency and productivity analysis by demonstrating a wide range of models and applications.

The inaugural conference was a success in itself. It attracted over 40 research group representatives from around Europe, with keynote speakers from the USA and the UK. A wide range of papers was presented at the conference, all focusing on the measurement of efficiency and productivity but all differing in terms of techniques employed and of industries analysed. This special issue of the *International Journal of Business Performance Management* presents a selection of the papers presented at the inaugural conference with the aim of giving a flavour of the variety of approaches and empirical cases that were used by the contributors to the different sessions.

In the paper 'Country-level business performance and policy asymmetries in the UK', Webber *et al.* identify empirically the factors that explain the different levels of labour productivity that British manufacturing plants experience. To this purpose, they estimate an augmented Cobb-Douglas production function on a cross-section of

establishments sourced from the ARD dataset where both measures of local availability of skilled workforce and of local geographical competition appear among the variables that explain labour productivity differentials across England, Wales and Scotland. Their results show that, even after controlling for sectoral heterogeneity, there are still differences across the three macro-areas of the UK. Also the results suggest that scale effects for labour and capital do differ across England, Wales and Scotland and that policy-makers should be aware of these asymmetries.

In the paper 'Deregulation and productivity growth: a study of the Indian commercial banking industry', Zhao *et al.* examine the impact of regulatory reform on the performance of Indian commercial banks. Using a balanced panel data set covering from the beginning of the deregulation period (1992) to the most recent years (2004) and employing a DEA-based Malmquist index of total factor productivity change, this paper attempts to quantify the magnitude of total factor productivity change and identify its main sources. The empirical results seem to indicate that, after an initial adjustment phase, the Indian banking industry experienced sustained productivity growth, driven mainly by technological progress. The authors also explore whether deregulation has had a different impact on the performance of public, private and foreign banks and whether it affected the risk-taking behaviour of market participants. Banks' ownership structure seems to have an impact on bank efficiency but does not appear to have an influence on total factor productivity change. Although ownership *per se* does not seem to matter as much as increased competition, during the deregulation process foreign banks appear to have acted as technological innovators, thereby increasing even further the competitive pressure in the Indian banking market. Finally, the results also indicate an increase in risk-taking behaviour along with the whole deregulation process.

In the paper titled 'Parametric and nonparametric Malmquist productivity decomposition: a case study of European commercial banks', Olgu and Weyman-Jones investigate the productivity disparities of small commercial banks located in EU-12 and in accession countries over the 1997–2001 period. The empirical analysis is based on the comparison of a time-varying stochastic parametric distance function, with conventional DEA. Both parametric and nonparametric productivity indices are decomposed into their main components: technical efficiency change, technological change and economies of scale change. The results suggest evidence of consistency between the parametric and non-parametric findings where economies of scale change is the most important component of the overall productivity growth. Moreover, EU-12 small commercial banks reveal decreasing returns to scale while EU-10 commercial banks perform with slight increasing returns to scale.

The analysis of the performance of productive units sometimes involves the comparisons of units that are subject to incentives structures which have different bearings on the productivity and technical efficiency of these units. For instance, private hospitals differ from public hospitals in that they are exposed to market competition and, therefore, their drive towards higher productivity and efficiency is definitely more important than it is for public hospitals. How then should a comparison of productivity be made between the two sets of units when systematic, regulatory factors influence their productivity levels? In the paper titled 'Measuring productivity under different incentive structures', Jacobs and Sena seek to give a first answer by decomposing the Malmquist productivity index which measures productivity growth between two groups of decision-making units subject to different incentive structures. The advantage of this

index is that it shows, in addition to the usual technical efficiency and technical change, the gain (or loss) in productivity associated with a firm operating under a different incentive structure. This decomposition is based on the idea that the productivity of a unit can be measured not only with respect to its own 'within sample' frontier, but also with respect to the frontier computed under a different incentive structure. This can, therefore can give useful information to policy-makers about the magnitude of the productivity increases a set of units would experience in case of a change in the incentive structure.

In the paper titled 'Global productivity growth from 1980–2000: a regional view using the Malmquist total factor productivity index', Adesokan compares economic performance across nine world regions (Africa, Europe, the Far East, the Middle East, North America, the Pacific, South America, South Asia and South-East Asia) using the Malmquist (MTFP) Index in an attempt to identify the top performers. The Far East is found to be on the frontier during time period under consideration. Productivity growth for most regions was mainly driven by technological progress and by scale efficiency. All regions suffered from a fall in technical efficiency. Although regions within formal economic blocs perform better than others, the difference in performance is not statistically significant.

In the paper titled 'Productivity growth and structural changes in a partially liberalised market: a distance function approach', Duygun-Fethi *et al.* have used a panel data sample of European airlines over the period of partial market liberalisation, 1991–1995 to investigate whether productivity growth was affected in the immediate aftermath of this structural change. The empirical measurement in the paper is based on the comparison of a time-varying stochastic parametric distance function, with conventional DEA. This function is used to generate a parametric stochastic estimate of Malmquist productivity indices. The indices include a returns-to-scale effect to provide robust total factor productivity indices. These are compared to the nonparametric estimates. Measures of productivity change are consistent across both methods, with efficiency change dominating technical change in the response to the third liberalisation package in the European airline industry.

Finally, the paper by Jiang examines the efficiency of used car markets by taking into account the different preferences of consumers. Results show that the segment of the secondary market with the older version car models tends to have higher average efficiency compared to the segments with newer versions. Furthermore, the correlations between the efficiency scores and customer ratings across car models from 1994–2001 are all negative. Evidently the high efficiency car models are not obtaining the high overall ratings from customers. However, the significant and positive relationships between customer ratings and car prices indicate that car models better rated by consumers are indeed charged higher price. Good reading!