

A three-day course on

ADVANCED METHODS IN EFFICIENCY AND PRODUCTIVITY ANALYSIS

**Centre for Efficiency and Productivity Analysis
School of Economics, The University of Queensland**

27-29 September 2010

About the Course

This is a three-day intensive course on advanced methods for performance measurement for multi-input multi-output firms. Among other things, participants will learn how advanced methods in Data Envelopment Analysis (DEA) and Stochastic Frontier Analysis (SFA) can be used to estimate and draw inferences concerning the components of profitability and productivity change. They will obtain hands-on experience implementing these methods using different software packages and data sets. Details concerning the course content are provided overleaf.

Who Should Attend?

The course is aimed at graduate students, researchers, economists, statisticians and consultants from private and public sector organizations, regulatory authorities, regulated firms, infrastructure industries (e.g., electricity, gas, railways), service industries (e.g., education, health), and industries with branch structures (e.g., banks, credit unions, franchises, retail chains). Participants are expected to have attended a previous CEPA short-course on efficiency and productivity analysis and/or have an understanding of microeconomics and econometrics similar to that of an economics graduate of an Australian university.

About the Presenters

Chris O'Donnell is a Professor of Econometrics and Director of the Centre for Efficiency and Productivity Analysis at UQ. He is an Associate Editor of the *Journal of Productivity Analysis* and a former editor of the *Australian Journal of Agricultural and Resource Economics*. **Prasada Rao** is a Professor of Econometrics and ARC Professorial Fellow at UQ. He is an Associate Editor of the *Journal of Productivity Analysis*, a member of the Editorial Board of the *Review of Income and Wealth*, and a member of the Technical Advisory Group for the International Comparison Program at the World Bank. **Valentin Zelenyuk** is an Associate Professor of Econometrics at UQ. He has held positions as chief economist and chief strategist for Millennium Capital, one of Ukraine's largest investment banks, and CEO of Advisors LLC, a Ukrainian consulting firm.

Registration

	Earlybird (before 1/8/10)	Ordinary
Non students	\$1000	\$1300
Full-time students	\$500	\$700

Registration fees are in Australian dollars and include GST. Participants will receive sets of notes and relevant readings from the literature, including copies of the textbook by Coelli, T.J., Rao, D.S.P., O'Donnell, C.J. and G.E. Battese (2005) *An Introduction to Efficiency and Productivity Analysis*, 2nd Edition, Springer, New York. Registration includes morning/afternoon tea. Lunch is not included. To obtain a registration form, please email Louise West: louise.west@uq.edu.au.

Course Outline

Course instruction will take the form of lectures and tutorial sessions. The tutorial sessions will give participants hands-on experience using different data sets and software packages. The course will cover the following topics/modules:

- **Review of Productivity and Efficiency Concepts.**
This module reviews the concept of total factor productivity (TFP) and associated measures of efficiency. Participants learn that most common TFP indexes can be decomposed into measures of technical change, technical efficiency change, mix efficiency change and scale efficiency change.
- **Review of Measurement Methods.**
This module shows how measures of efficiency and productivity change can be computed using basic index number, linear programming (DEA) and econometric (SFA) methods. Participants obtain hands-on experience computing measures of productivity and efficiency using different software packages, including TFPIP, DPIN, DEAP, FRONTIER and MATLAB.
- **Growth Accounting.**
This module shows how measures of output growth can be broken down into components associated with input growth and a residual that reflects technological change. The module explains the relationship between productivity index numbers and the so-called Solow residual.
- **Advanced Index Number Methods.**
This module shows how to construct transitive index numbers for spatial comparisons. It also shows how the stochastic (econometric) approach to index numbers can be used to compute measures of reliability for certain types of index numbers. Participants obtain hands-on experience computing transitive index numbers using different software packages, including DPIN, LIMDEP, MATLAB and TFPIP.
- **Advanced DEA/FDH Methods.**
This module outlines the statistical foundations of data envelopment analysis (DEA) and free disposal hull (FDH) methods and explains alternative techniques for conducting bootstrap-based inference. Participants obtain hands-on experience constructing confidence intervals for nonparametric efficiency estimates using MATLAB.
- **Advanced Stochastic Frontier Methods.**
The module also shows how to draw finite sample inferences by estimating frontiers in a Bayesian framework. Participants obtain experience in estimating multiple-input multiple-output production technologies using MATLAB.

For further information, contact Chris O'Donnell: c.odonnell@economics.uq.edu.au