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One cannot be sure, though at the very least it is often argued that *(ceteris paribus)* those who have numbers will win the debate against those lacking them. Again *(ceteris paribus)*, those who have better numbers can expect to win.

Alan A. Powell and Richard H. Snape (1993)

(2009/9/9更新)

課程名稱	**生產經濟學 (一)** **PRODUCTION ECONOMICS (I)**	學　分	3 學 分
		必、選修	半 年 選 修 課
授課對象	本課程適合對效率與生產力分析有興趣的博士班研究生及相關研究單位專家學者。	課　號	**627 D**
授課時間	星期二 下午 2:20 - 5:20	授課地點	農經系二樓會議室

課程目的	本課程介紹效率(efficiency)與生產力(productivity)分析的四個主要研究方法，即最小平方計量生產分析法(least-squares econometric production models)、指數分析法(index numbers)、資料包絡分析法(data envelopment analysis, 簡稱DEA)、隨機邊界分析法(stochastic frontiers analysis, 簡稱SFA)。本課程將對每個研究方法的基本理論、特點與限制詳加介紹，並以實際投入產出資料與運算來說明其基本觀念，並討論其重要的延伸。本課程並將每個研究方法的重要參考文獻與應用做一般性介紹。本課程理論與應用並重，與效率與生產力分析相關的軟體程式，例如SHAZAM、SAS、GAMS、TFPIP、DEAP、FRONTIER等軟體程式將在課堂上加以說明與示範。 具體而言，本課程目的包括： 1) 生產經濟學(Production Theory)基本理論的介紹及其應用 2) 生產函數、成本函數及利潤函數的介紹、其理論架構及對偶關係 3) 生產函數、成本函數及利潤函數的實證應用 1) Index Numbers及總要素生產力(Total Factor Productivity，TFP)的介紹及實證應用 2) 介紹Data Envelopment Analysis(DEA)相關文獻、理論架構及其應用 3) 介紹Stochastic Frontiers相關文獻、理論架構及其應用 4) 熟悉GAMS、SHAZAM、SAS、TFPIP、DEAP、FRONTIER等相關軟體程式的操作及其在效率與生產力分析的應用
先修課程	無
軟體程式	(1) **SHAZAM: Econometrics Computer Program, Version 9.0,** University of British Columbia, CANADA, 2001. 本程式置於臺灣大學農業經濟學研究所電腦室，請向電腦室 諸秀姬小姐申請使用。 (2) **GAMS: Release 2.25, 1992,** Washington, D.C.: GAMS Development Corp. 本程式置於臺灣大學農業經濟學研究所電腦室，請向電腦室 諸秀姬小姐申請使用。 (3) **SAS, *Econometric Modeling, Simulation, and Forecasting,*** SAS/ETS User's Guide, Version 8, First Edition. SAS Institute Inc., 1999. 本程式置於臺灣大學農業經濟學研究所電腦室，請向電腦室 諸秀姬小姐申請使用。 (4) **TFPIP、DEAP、FRONTIER**等套裝軟體程式。
授 課 大 綱	**1. INTRODUCTION** 1. Introduction 2. Some Informal Definitions 3. Overview of Methods 4. Outline of Chapters 5. What is Your Economics Background?

授 課 大 綱	**2. REVIEW OF PRODUCTION ECONOMICS** 1. Introduction 2. Production Functions 3. Transformation Functions 4. Cost Functions 5. Revenue Functions 6. Profit Functions 7. Conclusions **3. PRODUCTIVITY AND EFFICIENCY MEASUREMENT CONCEPTS** 1. Introduction 2. Set Theoretic Representation of a Production Technology 3. Output and Input Distance Functions 4. Efficiency Measurement using Distance, Cost and Revenue Functions 5. Measuring Productivity and Productivity Change 6. Conclusions **4. INDEX NUMBERS AND PRODUCTIVITY MEASUREMENT** 1. Introduction 2. Conceptual Framework and Notation 3. Formulae for Price Index Numbers 4. Quantity Index Numbers 5. Properties of Index Numbers: The Test Approach 6. The Economic-Theoretic Approach 7. A Simple Numerical Example 8. Transitivity in Multilateral Comparisons 9. TFP Change Measurement Using Index Numbers 10. Empirical Application: Australian National Railways 11. Conclusions

授 課 大 綱	**5. DATA AND MEASUREMENT ISSUES** 1. Introduction 2. Outputs 3. Inputs 4. Prices 5. Comparisons over Time 6. Output Aggregates for Sectoral and Economy-wide Comparisons 7. Cross-Country Comparisons of Productivity 8. Data Editing and Errors 9. Conclusions **6. DATA ENVELOPMENT ANALYSIS (DEA)** 1. Introduction 2. The Constant Returns to Scale (CRS) DEA Model 3. The Variable Returns to Scale (VRS) Model and Scale Efficiencies 4. Input and Output Orientations 5. Conclusions **7. ADDITIONAL TOPICS ON DATA ENVELOPMENT ANALYSIS** 1. Introduction 2. Price Information and Allocative Efficiency 3. Non-Discretionary Variables 4. Adjusting for the Environment 5. Input Congestion 6. Treatment of Slacks 7. Additional Methods 8. Empirical Application: Australian Universities 9. Conclusions

授 課 大 綱	**8. ECONOMETRIC ESTIMATION OF PRODUCTION TECHNOLOGIES** 1. Introduction 2. Production, Cost and Profit Functions 3. Single Equation Estimation 4. Imposing Equality Constraints 5. Hypothesis Testing 6. Systems Estimation 7. Inequality Constraints 8. The Bayesian Approach 9. Simulation Methods 10. Conclusions **9. STOCHASTIC FRONTIER ANALYSIS** 1. Introduction 2. The Stochastic Production Frontier 3. Estimating the Parameters 4. Predicting Technical Efficiency 5. Hypothesis Testing 6. Conclusions **10. ADDITIONAL TOPICS ON STOCHASTIC FRONTIER ANALYSIS** 1. Introduction 2. Distance Functions 3. Cost Frontiers 4. Decomposing Cost Efficiency 5. Scale Efficiency 6. Panel Data Models 7. Accounting for the Production Environment 8. The Bayesian Approach 9. Conclusions

授 課 大 綱	**11. THE CALCULATION AND DECOMPOSITION OF PRODUCTIVITY CHANGE USING FROUNTIER METHODS** 1. Introduction 2. The Malmquist TFP Index and Panel Data 3. Calculation using DEA Frontiers 4. Calculation using SFA Frontiers 5. An Empirical Application 6. Conclusions **12. CONCLUSIONS** 1. Summary of Methods 2. Relative Merits of the Methods 3. Some Final Points
主要 教科書	Coelli, Timothy J., D.S. Prasada Rao, Christopher J. O'Donnell and George E. Battese, ***An Introduction to Efficiency and Productivity Analysis,*** Second Edition, New York: Springer Science+Business Media, Inc., 2005. [HB241.C64]
參考 用書	黃鏡如、傅祖壇、黃美瑛，績效評估：效率與生產力之理論與應用。新陸書局股份有限公司，2008年7月初版 [總經銷：福懋出版社有限公司 (02) 2351-2587，(02) 2361-7151] Beattie, B.R. and C.R. Taylor, ***The Economics of Production***, New York: Wiley, 1985. Chambers, Robert G., ***Applied Production Analysis: A Dual Approach.*** Cambridge: Cambridge University Press, 1988.

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	頁。
評分方式	(1) 習題作業佔學期總分 30% (2) 期中考試佔學期總分 30% (3) 期末考試佔學期總分 40%
備　註	