

Guest editors' introduction

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The 2010 Asia–Pacific Productivity Conference (APPC), jointly hosted by Academia Sinica, several Taiwanese Universities and the Taiwan Efficiency and Productivity Association, was held at Academia Sinica in Taipei, Taiwan. Following the successful 1997 and 1999 Taipei Productivity conferences held in Taipei, the APPC was formed and has hosted biennial conferences throughout the Asia–Pacific region since 2002. With endeavors of APPC hosts in 2004 (Australia), 2006 (Korea), 2008 and 2010 (Taiwan), 2012 (Thailand) and the forthcoming 2014 conference to be held in Australia, the APPC has been recognized as an important international conference on productivity research, together with the North American Productivity Workshop and the European Workshop on Efficiency and Productivity Analysis.

Asia–Pacific Productivity Conference 2010 attracted about 150 participants from 23 countries, with 70 % of the participants coming from the Asia–Pacific region. While there were 108 papers presented at the conference, 35 manuscripts were submitted to the Journal of Productivity Analysis for publication consideration after the conference.

In this Special Issue we are pleased to present the APPC's best paper submissions. These 11 papers, authored

by researchers from eight countries worldwide, reflect a growing outside interest in the Asia–Pacific region. They also reflect a growing interest in modelling and measuring productivity and efficiency within the Asia–Pacific region, especially in the host nation Taiwan.

In the first paper Lee, Baek, Kim and Lee use Social Network Analysis to examine the chronological development pattern of Data Envelopment Analysis (DEA) and its relationship with various economic approaches to the same issues. The authors find that the development of DEA shares common characteristics with that of other fields, although its development differs in one significant respect: the OR/MS and economics approaches initially developed independently, and then slowly merged, a development pattern that is clearly tracked with Social Network Analysis.

In the second paper O'Donnell is concerned with the estimation of distance functions and (a relatively new and well-behaved measure of) productivity change, and with the decomposition of productivity change into technical efficiency change, technical change and (again, relatively new) mix effects. O'Donnell discusses the shortcomings of maximum likelihood and generalized method of moments strategies before settling on Bayesian methods to estimate distance functions. He illustrates the methodology using a state-by-year panel of inputs and outputs in US agricultural production.

In the third paper Zheng and Bloch examine the twenty-first century productivity decline in Australian mining. They compare an estimate obtained from a conventional growth accounting formula used by the Australian Bureau of Statistics with their own estimate obtained from a translog variable cost function. Over the longer period 1974–1975 through 2007–2008 their approach converts productivity decline to productivity growth, by

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incorporating the “missing input,” the natural resource, into the variable cost function, and by adjusting the capital input for the rate of capacity utilization.

The fourth and fifth papers are concerned with very different notions of business diversification.

In the fourth paper Nemoto and Furumatsu examine efficiency, scale and scope economies from a dual (to a conventional cost frontier) input distance function perspective. The motivation for the dual approach is that estimation of an input distance function does not require information of input prices, whereas estimation of a cost frontier does. They apply their model to a sample of Japanese private universities, in which the presence of scale and scope economies is an important issue. They find evidence of substantial inefficiency, economies of scale, particularly at relatively small universities, and diseconomies of scope, very loosely speaking between teaching and research activities. The authors conclude by discussing the potential structural implications of their findings.

In the fifth paper Cincera and Ravet assess the impacts of geographic and industrial diversification on productivity at large European R&D multinationals. Theory provides no clear guidance on the impact of either sort of diversification on business productivity, necessitating an empirical analysis. The authors find a positive impact of geographic diversification on R&D productivity, but a negative impact of industrial diversification, the latter suggesting diseconomies of diversification if not scope.

In the sixth paper Juo examines the financial implications of changes in inputs and outputs in a panel of Taiwanese banks. Since the provision of loans is a risky endeavour, Juo accounts for risk by incorporating non-performing loans as an undesirable output. He then decomposes profit change into quantity and price effects, he decomposes the quantity effect into productivity and activity effects, and he decomposes the productivity effect into several conventional drivers of productivity change. Juo finds that the incorporation of non-performing loans has a substantial impact on a story about the sources of profit change in Taiwanese banks.

The seventh and eighth papers are concerned with two very different regulation schemes, rate of return regulation and incentive regulation.

In the seventh paper Førsund and Granderson examine the impact of rate of return regulation on the regulated firm’s input demand vector. They formulate eight hypotheses on the price elasticities of the firm’s input demand equations, and they treat these hypotheses as examples of the Le Chatelier Principle, since the rate of return

constraint is an additional constraint on the cost minimizing firm. They test their hypotheses using a panel of US electric utilities, and they find empirical support for all but one hypothesis.

In the eighth paper Chen, Chang and Lai study the performance of Taiwan’s incineration plants. They calculate input-oriented technical efficiencies, using a variety of techniques designed to screen out the separate impacts of statistical noise and exogenous variables. They find a statistically significant difference in efficiency scores after and before the screening exercise. They insert the initial and screened efficiency scores into Bogetoft’s reimbursement rule, and they demonstrate the different signals the two scores send to the regulator.

In the ninth paper Yaisawarng, Asavadachanukorn and Yaisawarng employ a stochastic cost frontier to estimate cost efficiency and to decompose productivity change in the Thai non-life insurance industry during the 2000–2007 period. They find evidence of cost inefficiency, and they find productivity decline through 2004 and productivity growth thereafter. They also conduct a revealing in-depth analysis of the characteristics and business strategies and practices of the most and least cost-efficient firms.

The final two papers are concerned primarily with econometric estimation methods when panel data are available.

Huang, Chen, Lin and Chung consider estimation of a semiparametric stochastic cost frontier with shadow input prices, and they show how to obtain consistent estimates of both technical efficiency (which is common) and input allocative efficiency (which is not). They illustrate their estimation strategy with Monte Carlo simulations.

Kumbhakar, Lien and Hardaker evaluate the performance of six different panel data production frontier models for estimation of technical efficiency, and they illustrate their findings using an unbalanced panel of Norwegian grain farmers. The six models differ in their assumptions and specifications of technical efficiency, heteroscedasticity and heterogeneity. Their main finding is that efficiency estimates vary across models, which provides an important illustration of the sensitivity of statistical inference to model specification.

We wish to thank Robin Sickles, at the time Editor-in-Chief of the Journal, for commissioning this Special Issue, and we are grateful to the many reviewers who worked so hard to help us assemble this Special Issue devoted to research into productivity and efficiency issues in the Asia-Pacific region.