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Guest editor's introduction

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In July 2012, King Mongkut's Institution of Technology Ladkrabang (KMITL) and several well-known universities and government agencies in Thailand were honored to host Asia–Pacific Productivity Conference (APPC), held at the Administration and Management College of KMITL in Bangkok, Thailand. This is an important international conference for scholars and practitioners doing research in efficiency and productivity. The conference takes place every other year with varying venues throughout Asia. In 2012, the conference attracted over 160 submissions with 90 accepted for presentations. Approximately 90 participants from 28 countries attended. Of these presentations, 18 papers were submitted and 9 papers passed the normal reviewing process to be included in this special issue.

I am delighted to report that articles in this issue address effects of regulations on efficiency measurement, important aspects of the banking industry, sources of finance and competition, proper ways to estimate a distance function, and proper ways to compare performance across technologies.

In the first paper, Lundgren and Marklund provide empirical evidence that voluntary or market driven environmental performance has positive and significant impact on firms' profit efficiency. This conclusion is drawn from the following three-step analysis of a balanced panel sample of Swedish manufacturing firms in 1990–2004. First, the authors use Malmquist-type quantity index to compute environmental performance (EP). The authors extend existing studies by estimating EP as a function of policy variables, CO_2 regulation included, and decomposing it into environmental policy driven and market driven components. Second, the authors estimate a stochastic variable profit frontier and compute variable profit efficiency, under assumptions of no allocative inefficiency and Hicks neutral productivity growth. Third, the authors estimate profit efficiency as a function of the two components of EP and other factors that could affect profit efficiency.

The second paper not only addresses effect of regulations on efficiency, but also analyzes an important aspect of the banking industry. Specifically, Duygun, Shaban, Sickles and Weyman-Jones examine how the regulation on capital requirement affects productivity of banks in emerging economies. The authors use the envelope theorem to develop a short-run cost model which includes capitalization requirement as either a fixed level of equity capital or a fixed equity-asset ratio. The authors derive the shadow price of the equity-asset ratio and relate it to returns to scale measures for suboptimal fixed input case. The short-run cost model is estimated and total factor productivity is decomposed into five sources; namely, scale efficiency change, allocative efficiency change, technical change, cost efficiency change and equity-asset ratio change. The authors interpret sign and magnitude of the shadow price as over leverage, active capitalizer or excessive capitalizer and put it in the context of the change in total factor productivity.

The next two papers focus on modelling bank inputs and outputs. The third paper by Fukuyama and Weber analyze Japanese banks in 2007–2010 where the authors avoid choosing deposits and other raised funds as either intermediate or final outputs by using a 3-year dynamic network model. Unlike many existing studies, their production model includes both deposits and other raised funds as outputs in the first stage and as inputs in the final stage

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when loans and securities investments are final outputs. The authors also explicitly incorporate non-performing loans as an undesirable output. The authors find that smaller regional banks are more efficient than larger city banks and suggest that banks should produce more intermediate products to increase final products.

In the fourth paper, Epure and Lafuente consider non-performing loans as an undesirable output. In contrast to Fukuyama and Weber and other studies which assume a joint production of desirable and undesirable outputs, the authors relate non-performing loans to specific desirable outputs, namely, performing loans. Hence, non-performing loans are unrelated to other banking activities such as investments. Since the authors wish to improve the use of bank efficiency for managerial control, it is important to incorporate credit risk into the measurement. The non-performing loan is a measure of credit risk in their analysis of a sample of Costa Rican banks in 1998–2012. Efficiency scores that explicitly account for risk are related to CEO turnover.

The fifth paper does not focus on the performance of a banking industry per se. Rather, Girma and Vencappa establish the relationship between financing sources and total factor productivity growth for manufacturing firms in India from 1989 to 2008. The authors use an extended IV technique to correct endogeneity in firm's inputs. They conclude that private firms with access to bank and non-bank financing sources experience growth enhancement. However, financing sources do not matter for growth in foreign-owned and state-owned enterprises.

Li and Zhao, in the sixth paper, borrow DEA techniques to examine competitiveness and development strategies of 31 provinces in China for 2005 and 2008. The basic question is whether inequality of competitiveness among provinces affects real GDP per capita. The authors use 9 different dimensions of the competitiveness index as outputs and calculate overall efficiency as well as its components (i.e. productive efficiency and allocative efficiency). This is the use of existing technique with a new twist in the interpretation where the authors frame results in terms of proportional and disproportional strategies. The authors also classify competitiveness dimensions into factor driven, structure driven and government driven sources which are useful in designing appropriate course of actions to improve standard of livings in particular provinces.

The seventh paper focuses on econometric estimation of distance functions. Past studies use real world data to estimate distance functions. In the context of output distance functions, two main estimation methods are (1) applying homogenous degree plus one in outputs to the estimation model (OD) and (2) using Euclidean mean to the estimation of the ray production function (SR). In this paper, Henningsen, Henningsen, and Jensen use Monte-Carlo simulation to compare these two popular methods. Given a translog output distance function with different specifications such as separability in inputs and heteroscedasticity in the two-sided error term, the authors find that neither OD nor SR method is superior. However, efficiency rankings based on the OD method is slightly more reliable than those from the SR method. In addition, OD is more robust regarding misspecification of the noise term. On the other hand, the SR method is superior to OD when a substantial portion of the sample contains zero value for some variables.

The final two papers argue that meta-production technology should be used when one wants to compare performance of firms across different technologies. The eighth paper, Huang, Juo, and Fu apply a DEA meta-technology approach to compare cost efficiency and productivity of Chinese and Taiwanese banks in 2006–2009. DEA meta-cost Malmquist index is illustrated. Gaps in technical efficiency, allocative efficiency, technology and input price effect are considered as potential sources of the productivity gap. Results suggest both countries experience technology growth. Furthermore, Taiwanese banks could benefit from Chinese banks on how to allocate and manage inputs while Chinese banks could learn from Taiwanese banks on technical aspects of loan provisions and investment decisions.

The ninth paper is a novel application of Huang et al. (2012) technique for estimating a stochastic meta-production frontier. This new estimation technique enables researchers to estimate the meta-production function as a stochastic frontier instead of a deterministic linear programming method suggested by O'Donnell et al. (2008). In this paper, Chang, Huang, and Kuo apply this new method to analyze a sample of accounting firms in USA, Taiwan and China and conclude that firms in USA and Taiwan have adopted the most advanced technology available while firms in China are lagged behind.

I would like to thank reviewers for this issue whose names appear at the end. Their critical comments and suggestions help improve quality of accepted papers. I also would like to thank Professor Robin Sickles, at the time Editor-in-Chief of this journal, and Professor William Greene, the current Editor-in-Chief, for their support and guidance. Most importantly, I am grateful to Dr. Wirat Krasachat, my co-organizer of APPC 2012, who suggested that we worked together to host the APPC 2012 for which this special issue is one of the outcomes. Although I cannot list names of everyone involved in the APPC 2012 and this special issue, their assistance on the front stage as well as the back stage is much appreciative. Thank you!!!

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