UNIVERSITY OF SOUTHERN QUEENSLAND

Knowledge-Based Economy (KBE): An investigation of theoretical frameworks and measurement techniques in the South East Asian region

A dissertation submitted by
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For the award of
Doctor of Philosophy

2014

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Abstract

Recent times have seen knowledge take on increasing importance as one of the most important drivers of economic growth. The difference between a knowledge-based economy (KBE) and a resource-based one is that with the former, the main feature is the ability of individuals and firms to generate innovation. Other forms of competition, such as through pricing strategies and access to resources, become secondary. Generally speaking, knowledge is information combined with technology that dramatically increases output. Organisations such as the Organization for Economic Cooperation and Development (OECD), Asia Pacific Economic Cooperation (APEC), Australian Bureau of Statistics (ABS) and the World Bank Institute (WBI) have developed different KBE frameworks through which to indicate the extent of individual countries' knowledge base and to implicitly guide policy. However, these frameworks have little in the way of theoretical underpinnings, and applying them universally across all countries in different regions, at different stages of development and with different institutional, social and economic characteristics may be misleading and result in inappropriate policy responses. This thesis proposes a framework which clearly distinguishes input-output indicators of a knowledge-based economy under four important dimensions: acquisition, production,

distribution and utilisation. Indeed, this study attempts to adapt measure and investigate them using a practical policy oriented approach for selected Association of South East Asian (ASEAN) and emerging economies which are endeavouring to transform from a resource-based to a knowledge-based economy. The results of this study indicate that theoretically the knowledge-based economy concept is not a new concept and has in fact been present in the literature since the industrial revolution. However, the extent of KBE in cross-country studies, measurement techniques and innovation system studies is very recent. This research demonstrates the concept of the national and regional innovation system, and how to apply recent non-parametric techniques like order-m, order-alpha to rank the best practice countries in this field. Most of the cases, including Singapore, South Korea and Philippines come as frontier countries in both scale and pure technical efficiency of non-parametric analysis. We believe an important contribution can be made to the literature, whether it is the application of Data Envelopment Analysis, Malmquist productivity analysis, the introduction of most productive scale size and peer countries, order-m, order-alpha, TOBIT model and finally the bootstrapping technique in this KBE innovation study.

CERTIFICATION OF DISSERTATION

The work submitted in this dissertation is original, except as acknowledged in the text. The material herein has not been submitted, either in whole or in part, for any other award at this or any other university except where acknowledged.

_____

Munshi Naser Ibne Afzal (candidate) Date

ENDORSEMENT

_____

Professor Roger Lawrey (supervisor) Date

_____

Professor Jeffrey Gow (associate supervisor) Date

Acknowledgements

At first, I am paying my gratitude to the almighty Allah, for the completion of the research work. Without His compassion, this research work would not have been possible. I would like to express my heartfelt gratitude to my principal supervisor Professor Dr. Roger Lawrey, Head of School, School of Commerce, and University of Southern Queensland. Without his help, guide, support, advice and constant feedback I would not have completed my research at all. It is Professor Roger Lawrey who took the responsibility all along from University Brunei Darussalam where this thesis first started to University Southern Queensland and it is his hard work and quick guidance helps me to finalize my thesis. I must say, Professor Roger's systematic and sincere supervision and guidance enable me to complete this work successfully. I am very grateful to him regarding all the financial support, scholarships that make this thesis and my research possible. In short, I would like to mention the famous quote from a Brazilian writer Paulo Coelho about Professor Roger, 'What is a teacher? I'll tell you: it isn't someone who teaches something, but someone who inspires the student to give of his best in order to discover what he already knows'.

It is indeed a great honour and privilege for me also to thank my honourable teacher Dr. Nandana Wijesiri Goonewardena who was my first supervisor during my inception in the PhD programme in University Brunei Darussalam along with Professor Dr. Roger Lawrey. All of my Professor's continuous encouragement and support, help me to finish the research in due time. I am also very thankful to my second supervisor Professor Dr. Jeffrey Gow from USQ for his scholarly comments and suggestions. I am indebted to Professor Jeffrey Gow for the continuous support, encouragement, advice and prompt

feedback. Finally I want to express my deep gratitude to my parents, my wife Umme Humayara Manni and my colleagues for their support and encouragement.

Research Outputs from this thesis

Afzal, M. N. I. (2014). An empirical investigation of National Innovation System (NIS) using Data Envelopment Analysis (DEA) and the TOBIT model. *International Review of Applied Economics (IRAE), 28*(4) (**accepted & forthcoming**). [Taylor & Francis publication house, Scopus, SSRN, ISI, ERA and Australian Business Deans Council (ABDC) indexed]

Afzal, M. N. I., & Lawrey, R. (2014). Measuring the importance and efficiency of research and development (R&D) expenditures in the transformation of Knowledge-Based Economies (KBEs): A case study of the ASEAN Region. *International Journal of Asia Pacific Studies*, *10*(1), 33-47. [ERA, Scopus, ABDC indexed]

Afzal, M. N. I. (2013). Are science valleys and clusters panacea for a knowledge economy? An investigation on Regional Innovation System (RIS): concepts, theory and empirical analysis. *Asian Research Policy (ARP), 4*(2), 114-125. [**ARP Best paper award 2013**][SSRN indexed]

Afzal, M. N. I., & Lawrey, R. (2013). National Innovation System (NIS): An empirical investigation with robust non-parametric partial frontier analysis. *Margin- The Journal of Applied Economic Research.* (under revision).[SAGE publication, ERA, Scopus, ABDC indexed]

Afzal, M. N. I., & Manni, U.H. (2013). An empirical productivity analysis of ASEAN economies in transition towards knowledge-based economy. *Asian Research Policy, 4*(1), 1-9. [SSRN indexed]

Afzal, M. N. I., & Lawrey, R. (2012a). KBE frameworks and their applicability to a resource-based country: The case of Brunei Darussalam. *Asian Social Science, 8*(7), 208-218.[ERA, ABDC indexed]

Afzal, M. N. I., & Lawrey, R. (2012b). Knowledge-Based Economy (KBE) frameworks and empirical investigation of KBE input-output indicators for ASEAN. *International Journal of Economics and Finance, 4*(9), 13-22. [ERA, ABDC indexed]

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Afzal, M. N. I., & Lawrey, R. (2012e). Investigating World Bank Knowledge Assessment Methodology (KAM) using Data Envelopment Analysis (DEA): A study in ASEAN region. *Research Journal of Science and IT Management*, *1*(12), 32-38. [ISI indexed]

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Acronyms

ABS	Australian Bureau of Statistics
APEC	Asia Pacific Economic Cooperation
ASEAN	Association of South East Asian Nations
BCC	Banker, Charnes and Cooper model
CCR	Charnes, Cooper and Rhodes original model
COMPUSE	Computer users per 1000 population
CRS	Constant Returns to Scale
DEA	Data Envelopment Analysis
DRS	Decreasing Returns to Scale
DMU	Decision Making Unit
EDUEXP	Education expenditure
EMS	Efficiency Measurement System
FDI	Foreign Direct Investment
GZGDP	Growth of real GDP
HITECHEXPO	High-tech export
IPR	Intellectual property rights
IRS	Increasing Returns to Scale
KAM	Knowledge Assessment Methodology
KBE	Knowledge Based Economy
KNOWTRANS	Knowledge Transfer rate from university to industry
LRQUA	Legal and regulatory quality
MPI	Malmquist Productivity Index

MPSS	Most Productive Scale Size
OECD	Organisation for Economic Co-operation and Development
PTE	Pure Technical Efficiencies
RDEXP	Research and development expenditure
SE	Scale Efficiencies
SECONDEN	Secondary enrolment
STAR	Number of Scientific and Technical Journal articles per year
TFP	Total Factor Productivity
TRANS	Transparency of government policy is satisfactory
TSE	Technical and Scale Efficiencies
VRS	Variable Returns to Scale
WBI	World Bank Indicator
WCY	World Competitiveness Yearbook