

**Privatisation, Restructuring and Regulation:
Electricity Supply Industry in Thailand**

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Except where otherwise indicated, this thesis is my own original work.

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ABSTRACT

After the 1997 financial crisis electricity supply industry (ESI) restructuring and privatisation of state owned enterprises (SOEs) in this industry were included in the Master Plan for State Enterprise Sector Reform.

Considering the extent of debate over privatisation, restructuring and regulation of the ESI in Thailand in recent years there was a surprising lack of rigorous economic analyses and studies. This thesis aims to fill that gap.

Part I of this thesis highlights the economic and political background material on: the SOE sector; reform and privatisation of SOEs; SOEs, restructuring and regulation in the ESI in Thailand.

Then, in Part II, the theoretical and empirical literature on privatisation, natural monopoly and economic regulation along with regulation in practice, is drawn upon to create framework for analyses in Part III. In addition, characteristics of developing countries are discussed to explore an appropriate choice of regulatory regimes in Thailand.

In Part III analyses of regulation and privatisation in ESI in Thailand are presented. Regulatory, efficiency and fiscal issues are examined.

The major finding from the regulatory analysis is that, due to poor regulatory capacity, a specialised, separated and centralised form of regulatory body for ESI is recommended for Thailand. A high powered incentive regulatory regime, in the form of a revenue cap, is recommended for electricity transmission and distribution.

In addition, this analysis demonstrates that the adoption of regulatory finance from developed countries with well developed capital and equity markets needs some modifications to fit with Thailand, which is characterised by poor accounting and auditing systems and weakly functioning capital and equity markets. The problem of lack of data and asymmetric information faced by the regulator in Thailand is more severe than in developed countries.

Then this thesis examines the empirical analyses for the two widely claimed justifications for privatisation: efficiency improvement and fiscal benefit.

In the efficiency analysis, measures of the technical efficiency of the electricity generation sector in Thailand are estimated by employing a comparative application of Data Envelopment Analysis and Stochastic Frontier Analysis approaches. Results

show that the state owned, electricity generating company in Thailand is on the efficiency frontier, meaning that the expected efficiency improvement after it privatisation is unlikely to happen.

Then a fiscal analysis is undertaken to evaluate fiscal net benefits of full privatisation in form of asset sales of all SOEs in ESI. This analysis employed a bottom-up valuation approach, taking issues in the public sector into account, to assess fiscal costs (retention of SOEs) and benefits (sale of SOEs) of privatisation.

Full privatisation of Thai state owned, electricity generation company results in fiscal net benefits only when ESI restructuring and deregulation of wholesale electricity market are well established. Under revenue cap regulation, full privatisation of the regulated distribution monopolies is fiscally feasible only when they are privatised at very high sale price or privatised firms achieve very high annual costs reductions and operate much more efficiently than under public ownership.

In summary, ESI restructuring and adoption of a regulatory regime, form and finance from developed countries has to be undertaken with care and modified in light of Thai characteristics and economy. ESI reform requires proper sequencing. Building up regulatory capacity and designing effective and practical regulatory regimes are required to achieve effective regulation in Thailand. ESI has to be restructured to introduce competition, and regulation has to be in place to ensure fair competition and to regulate natural monopoly activities before privatisation should be considered. In view of the limited benefits of privatisation, alternative policies that can achieve the objectives of privatisation without transfer of ownership should be considered.

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LIST OF ABBREVIATIONS

CAPM	Capital Asset Pricing Model
CBC	Competitive Bilateral Contract Model
CRS	Constant return to scale
DEA	Data envelopment analysis
DORC	Depreciated optimised replacement cost
EGAT	Electricity Generating Authority of Thailand
EGCO	Electricity Generating Public Co. Ltd
EPPO	Energy Policy and Planning Office
ESB	Enhanced Single Buyer Model
ESC	Essential Services Commission, Victoria
ESCOSA	Essential Services Commission of South Australia
ESI	Electricity supply industry
FC	Full Competition Model
FIDF	Financial Institutions Development Fund
F_t	Automatic adjustment mechanism
GATT	General Agreement on Tariffs and Trade
IMF	International Monetary Fund
IPART	Independent Pricing and Regulatory Tribunal of New South Wales
IPP	Independent power producer
LOI	Letter of Intent
MEA	Metropolitan Electricity Authority
MOE	Ministry of Energy
NEPC	National Energy Policy Council
NEPO	National Energy Policy Office
NESA	New Electricity Supply Arrangement
NESDB	National Economic and Social Development Board
NIRS	Non-increasing return to scale
OECD	Organisation for Economic Co-operation and Development
OFGEM	Office of Gas and Electricity Markets
ORG	Office of the Regulator-General, Victoria

OTTER	Office of the Tasmania Energy Regulator
PC	Partial Competition Model
PEA	Provincial Electricity Authority
PL	Partial Liberalisation Model
PPA	Power purchase agreement
QCA	Queensland Competition Authority
RATCH	Ratchburi Electricity Generating Holding Public Co. Ltd
ROR	Rate of return
SE	Scale efficiency
SEPC	State Enterprise Policy Commission
SERC	State Enterprise Reform Committee
SFA	Stochastic frontier analysis
SOE	State owned enterprise
SNC	Super National Champion Model
SPP	Small power producer
TE	Technical efficiency
UK	United Kingdom
US	United States
VRS	Variable return to scale
WACC	Weighted average cost of capital

LIST OF UNITS

BTU	British thermal unit
GWh	Gigawatt hour
kV	Kilovolt
kW	Kilowatt
kWh	Kilowatt hour
MW	Megawatt
MWh	Megawatt hour