

Reforming Power Markets: Lessons from Five Developing Countries

presented at:

*Seminar on Public Policies for Electricity, Energy Commission
Mexico City, 14 April 2004*

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Program on Energy & Sustainable Development

1. Electricity Market reforms

- Five-country comparison
(Brazil, China, India, Mexico, South Africa)
- IPPs

2. Geopolitics of Natural Gas

- Looking to 2030

3. Rural energy supply

- Shift from traditional to modern fuels and technologies

4. Climate change policy

- Beyond Kyoto

Five-Country Study: Research Partner Network

- **Brazil**
 - Federal University of Rio (Adilson de Oliveira)
- **China**
 - Stanford University (Chi Zhang & Tom Heller)
 - GTDRC (Guangdong) and Shanghai Academy of Sciences
- **India**
 - Carnegie Mellon (Rahul Tongia)
 - Indian Institute of Management (P.R. Shukla)
- **Mexico**
 - CIDE (Victor Carreon and Juan Rosellon)
 - SENER and Stanford University (Armando Jimenez san Vincente)
- **South Africa**
 - University of Cape Town (Anton Eberhard)

Five-Country Study:

Overview of my Comments

1. Causes of Reform

- From **state-centered** to **market-oriented** power systems

2. Speed and Character of Reform

3. Outcomes

- Impact on organization of the power sector
- Impact on the “social contract”

1. Causes of Reform

- In the advanced industrialized nations
 - Goal: economic efficiency
 - Expected outcome: tariff *reductions*
 - Actual outcomes: varied; end of declining cost commodity paradigm
- In these five developing countries
 - Goal: financial solvency and investment
 - Realistic outcome: tariff *increases*

Reform Strategies: No Textbook Model

Country	Strategy
Brazil	Privatization of distribution and generation companies to raise money; allowance for IPPs; creation of hydro system operator; independent regulator
China	Reform at the margins (IPPs) and corporatization of state enterprises to raise money; nascent independent regulator
India	Reform at margins (IPPs and guaranteed returns for national power corporation) then restructure markets then privatize distribution; independent regulator.
Mexico	Reform at the margins (IPPs); reforms stalled due to political and constitutional barriers; independent regulator
South Africa	Aggressive electrification; reform of distributors; corporatization of utility; independent regulator

2. Speed and Character of Reforms

- Electricity Reforms depend on other reforms
 - Factor Markets
 - Labor; fuels
 - Judicial
 - Independent regulators
 - Corporate Governance and accounting
 - Essential for regulatory oversight and private investment
 - Competition Policy
 - No evidence yet—no markets
 - Finance
 - The single most important factor
 - State sector finance; soft budget constraints
 - Contrast w/ OECD
 - reform with “rule of law,” market institutions, and independent financial sectors already in place

3. Outcomes:

Organization of the Power Sector

- Emergence of “hybrid markets”
 - Partially state-controlled
 - Financing; tariffs
 - Partially market
 - Project and concession bidding
 - Brief market experiments
 - Six provinces in China (1999-2001)
 - A sustainable model for investment?
 - Predictability and solvency

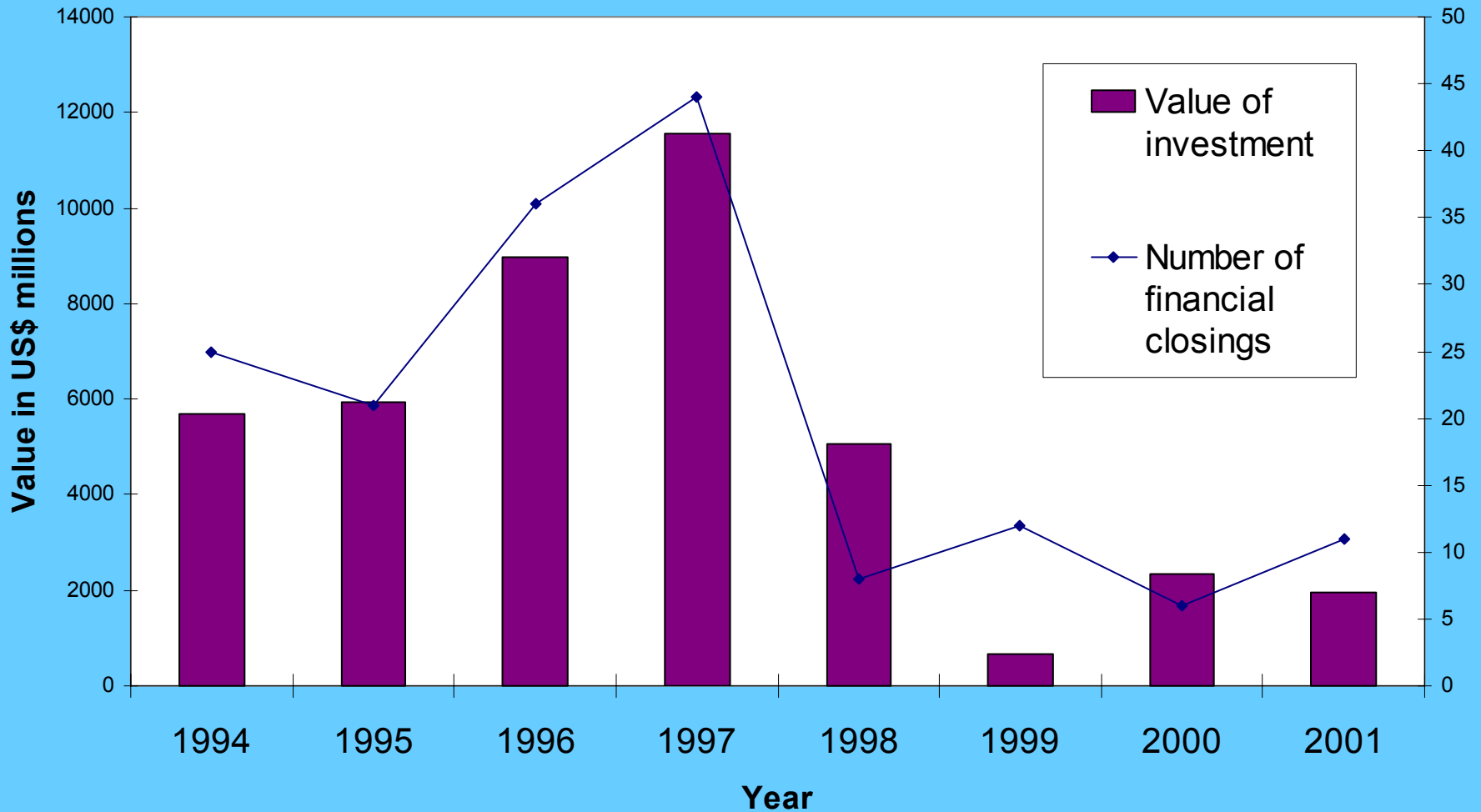
Hybrid Markets

- Fragmented Ownership and Control
 - Isolated pockets of profitability: listed corporations
 - Pervasive under-performing: retained by the state
- Hybrid financing
 - Hard debt; equity squeeze; soft loans; pervasive state “safety nets”
- Hybrid governance
 - “JV model” survives
 - Constant pressure to “socialize the downside and privatize the upside”
- Policy implications: tunneling strategies?
 - APDRP in India
- Policy implications: large effect of transparency reforms
 - Corporate governance and accounting

3. Outcomes (continued)

- Sustainable model for investment?
- Impact on “social contract”
 - Electric services for the poor
 - Neutral to positive
 - Protection of the environment
 - Neutral to positive
 - Investment in innovation
 - Very negative?

Value and Number of Financial Closings of Greenfield Electricity Projects in East Asia and the Pacific



Final Observations

- Central role for “non-electric” reforms
 - Especially financial and judicial reforms
- Importance of building coalitions for reforms
 - E.g., “tunneling through” opposition
 - APDRP in India
- Independent regulators as substitutes for government
 - To create confidence and stability
- Regulators overseeing hybrid markets, not textbook markets
 - Key issues: governance, transparency, IPP tenders
 - Lesser issues: market power, congestion