

# Reforming Power Markets: Lessons from Five Developing Countries

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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

# Power Sector Reform in Developing Countries

## 1. Causes of Reform

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

## 2. Speed and Character of Reform

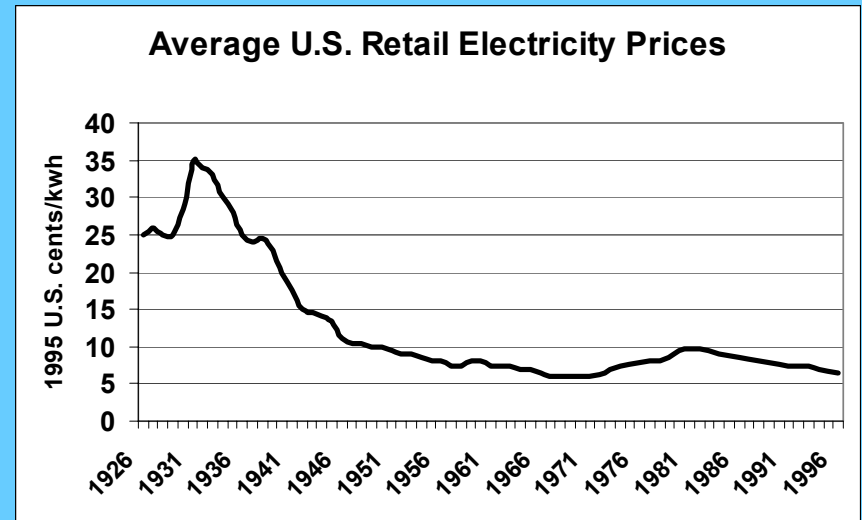
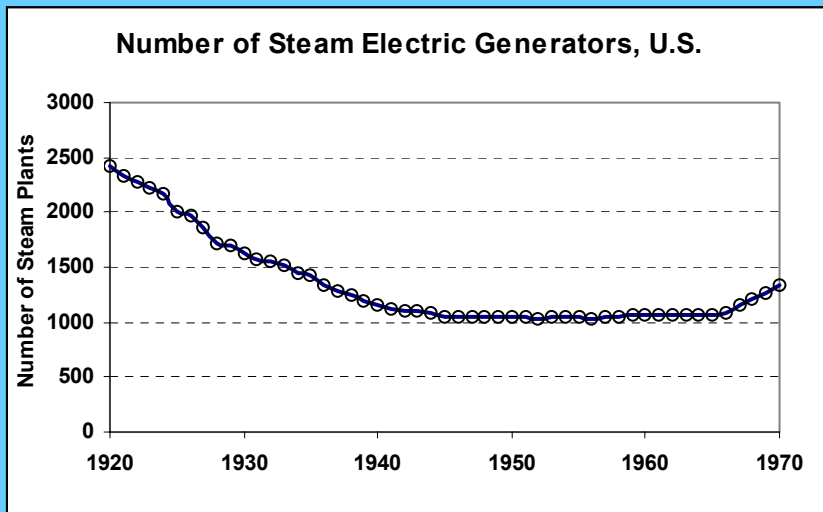
## 3. Outcomes

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

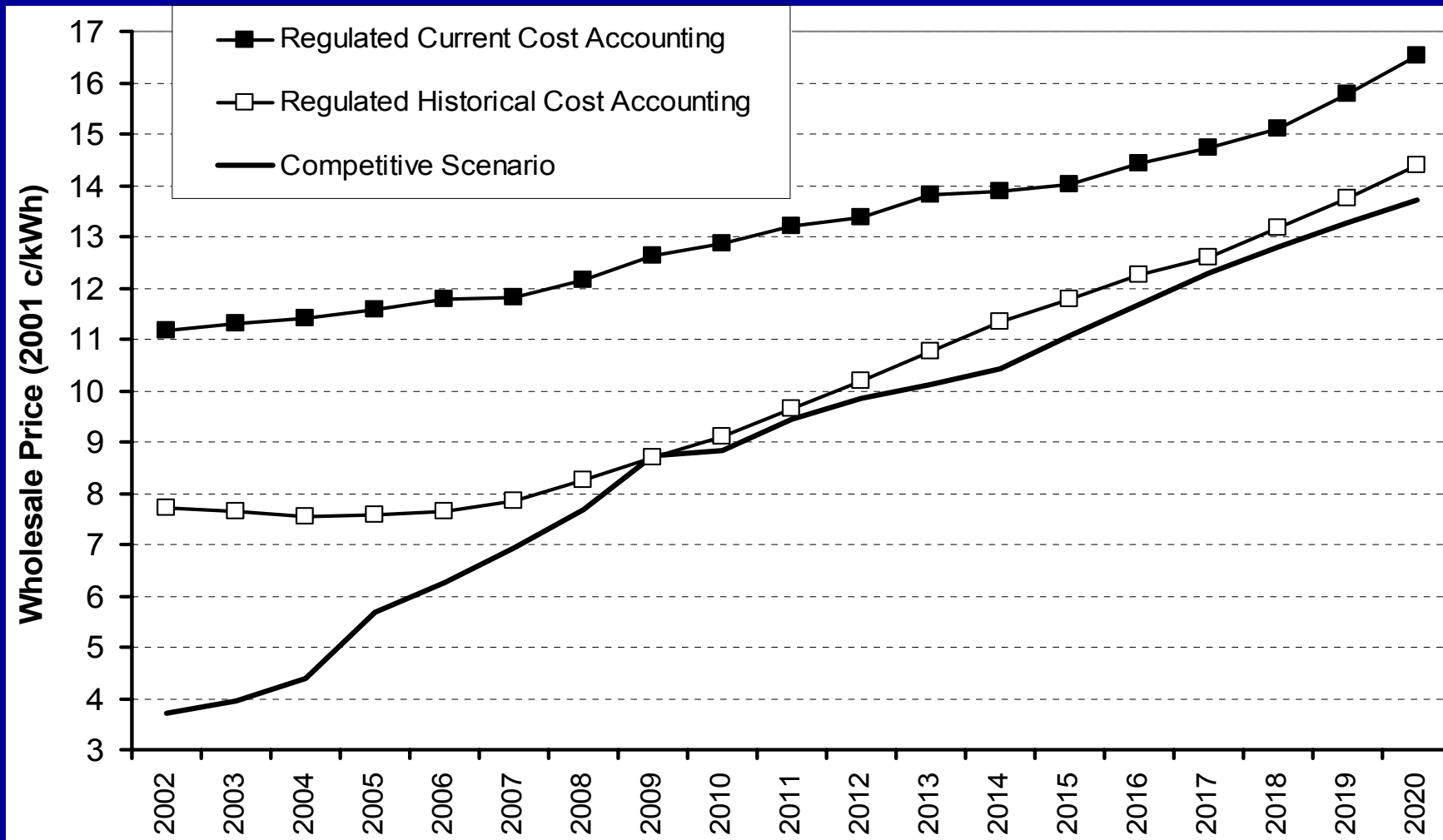
# 1. Causes of Reform

- In the advanced industrialized nations
  - Goal: economic efficiency
  - Expected outcome: tariff *reductions*
- In these five developing countries
  - Goal: financial solvency and investment
  - Realistic outcome: tariff *increases*

# End of the Declining Cost Paradigm: United States example



# Expected Future Costs of Power Delivery in South Africa



# 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

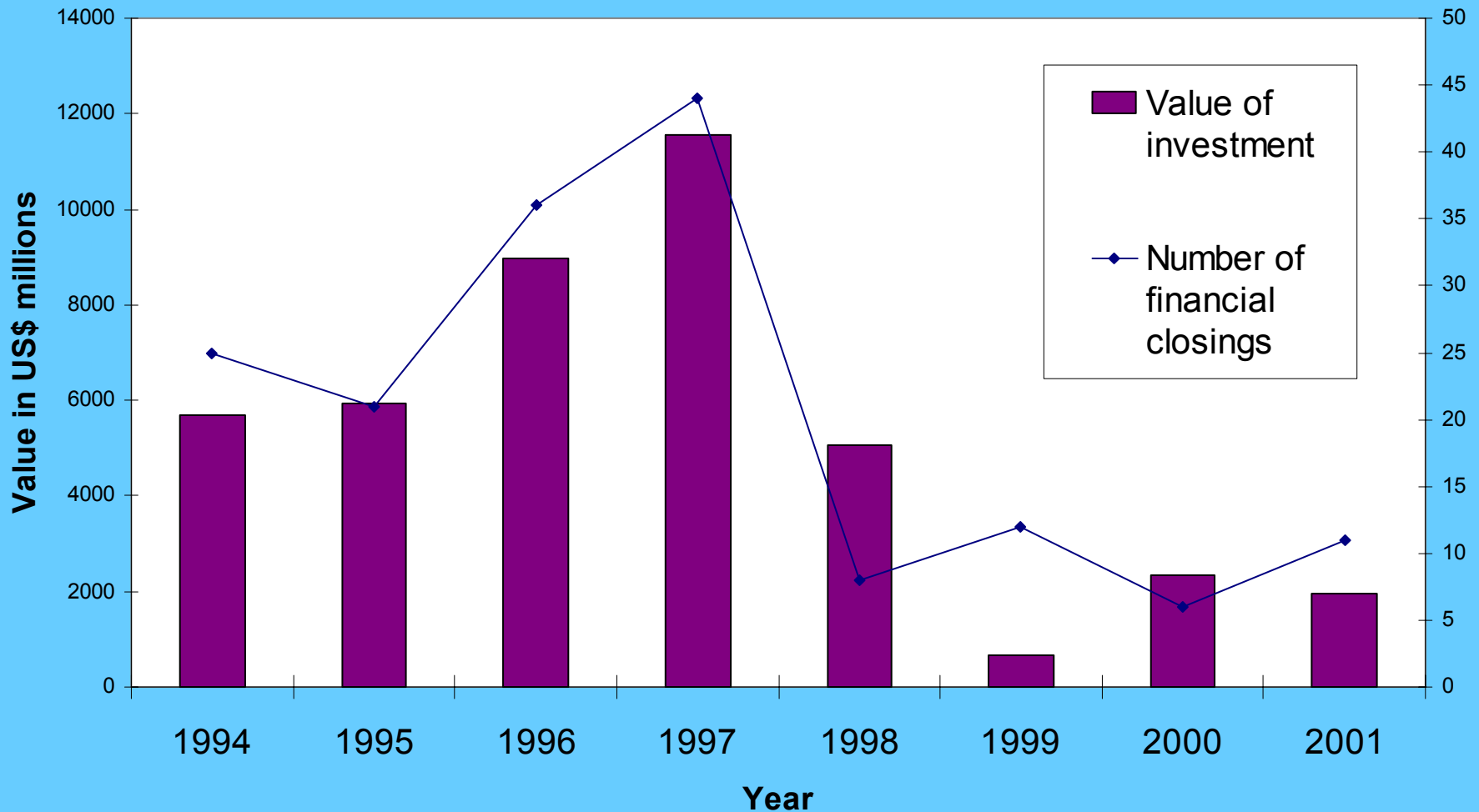
- Electricity Reforms depend on other reforms
  - Factor Markets
    - Labor; fuels
  - Judicial
    - Independent regulators
  - Corporate Governance and accounting
    - Essential for regulatory oversight and private investment
  - Finance
    - The single most important factor
    - State sector finance; 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

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



# 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)

- Impact of Restructuring on **Reliability**?
  - Still unclear
  - Financial reforms probably very positive
- Impact on “social contract”
  - Electric services for the poor
    - Neutral to positive
  - Protection of the environment
    - Neutral to positive
  - Investment in innovation
    - Very negative?

# Final Observations

- Central role for “non-electric” reforms
  - Especially financial and judicial reforms
- Importance of building coalitions for reforms
  - Coalitions that favor reform
  - “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