

Reforming Power Markets: Lessons from Five Developing Countries

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From State-Centered to Market-Centered...

- Organization
 - Unbundling; fragmentation
- Ownership
 - Privatization, IPPs
- Financing
 - Market finance replaces “soft budgets”
- Governance and Accounting
 - External shareholder accountability
- Oversight
 - From the state to independent regulators

Five Critical Developing Countries

Country	Populat'n	Income (GDP/cap \$, PPP)	GDP (billion US\$)	Power Supply (Twh)	Gen. Capacity (Gw)	Dominant Fuel	New Fuel
Brazil	170m	7625	595	332	69	Hydro (88%)	Gas (0.2%)
China	1262m	3976	1079	1240	294	Coal (78%)	Gas (0.4%)
India	1016m	2358	456	527	108	Coal (75%)	Gas (6%)
Mexico	98m	9023	575	192	39	Oil (47%)	Gas (18%)
South Africa	43m	9401	126	200	40	Coal (93%)	Gas (0%)

Reform Strategies

Country	Strategy
Brazil	Privatization for investors. Sell distribution companies then generation companies
China	Reform at the margins (IPPs) then corporatization
India	Reform at margins (IPPs, state power corp) then restructure markets then privatize distribution
Mexico	Reform at the margins (IPPs) then (hopefully) full competition
South Africa	Social benefits of electrification then corporatization then (maybe) privatization

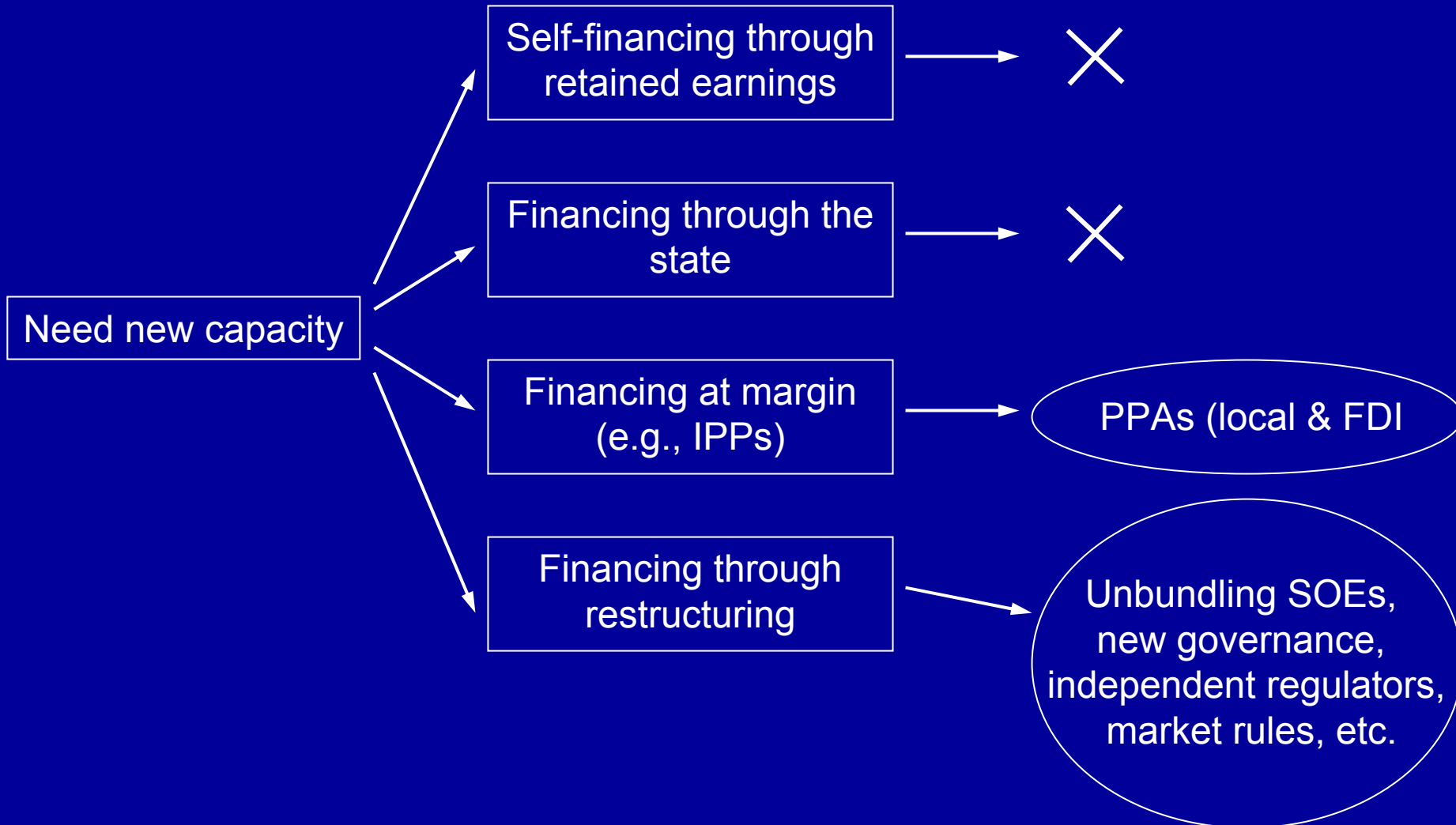
Main Results

1. No “textbook” restructuring
2. Creation of “hybrid markets”
 - Partially state-controlled
 - Financing; tariffs
 - “Equity squeeze” for IPPs in slack markets
 - Partially market
 - Project and concession bidding
 - Brief market experiments
 - Orissa; wet hydro in Brazil
3. Regulators: replacement for government

Why No “Textbook” Restructuring? (1)

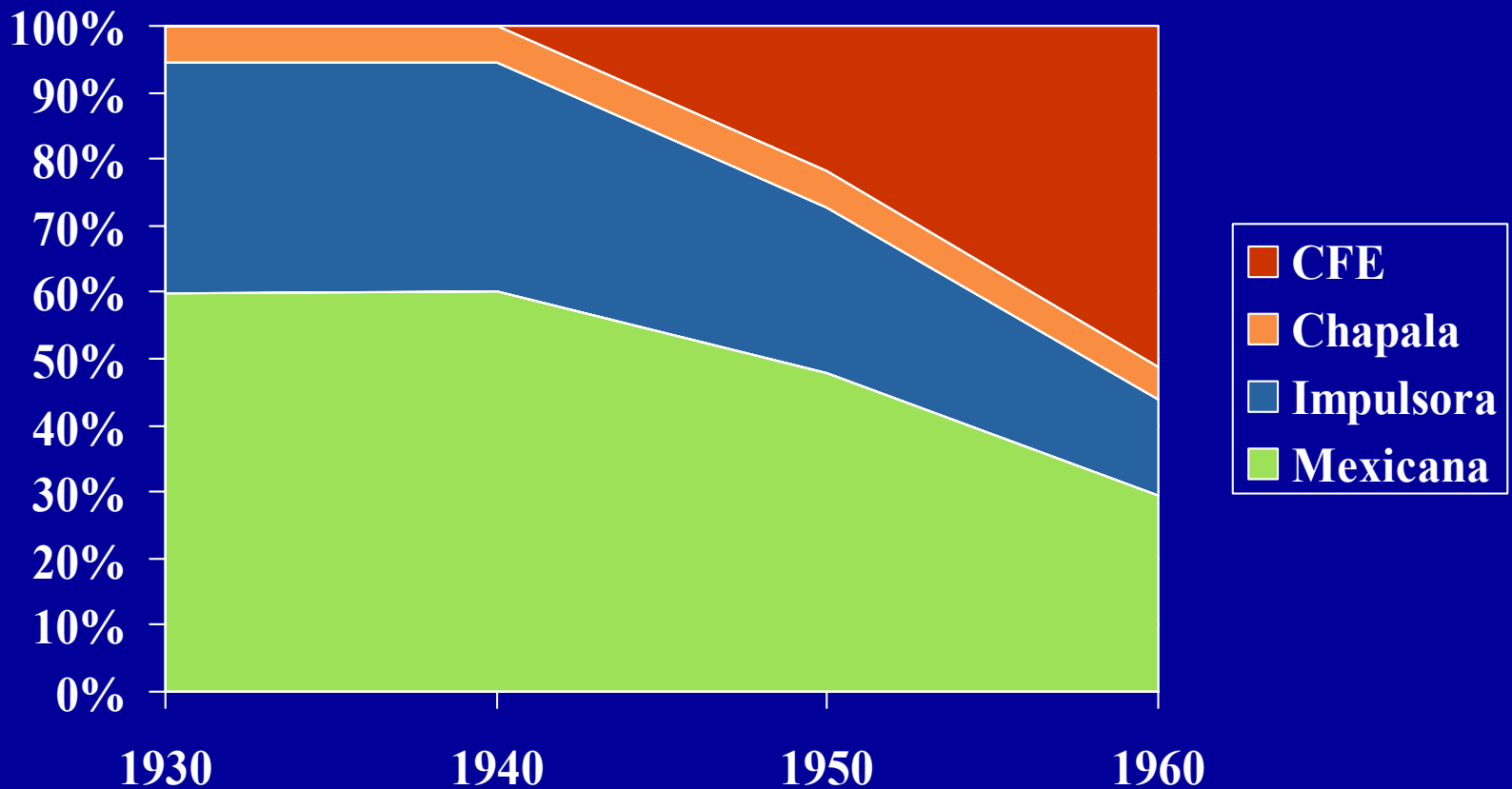
- Key Reform Driver: Need for New Capacity
 - Tight systems; bad context for true markets
 - How to attract investors
 - Markets, or stability?
 - Brazil’s experience
 - Fast reformers focus on IPPs
 - China, India, Mexico, Brazil
 - Slower reformers have excess capacity
 - South Africa
 - Contrast w/ OECD: efficiency driven reforms

Electric Power Restructuring: Financing Options



Time for a Change?

CFE's slow expansion in Mexico



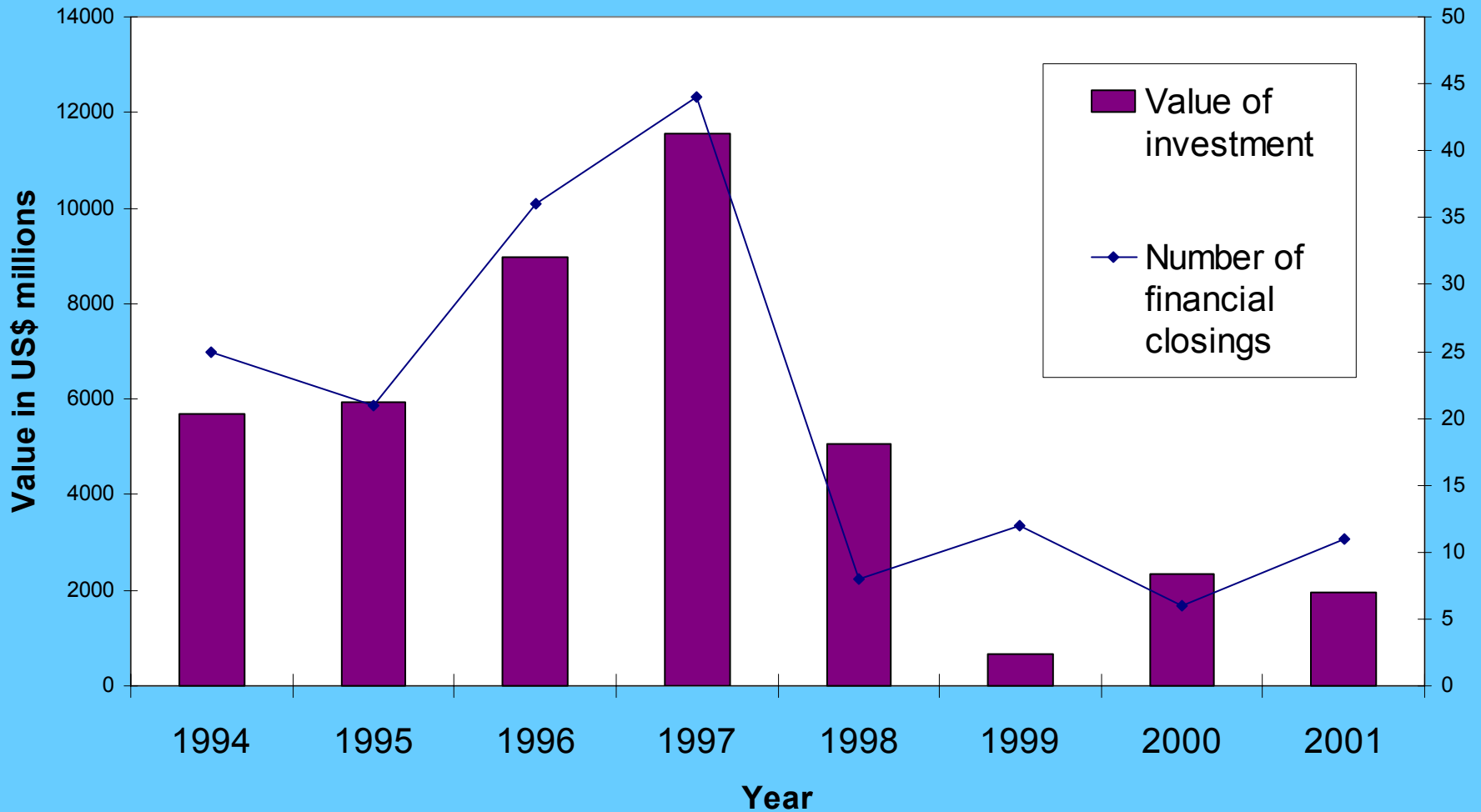
IPPs in Mexico: Visions for the Future

- Close to 60 billion dollars will be required during the next 10 years in the power sector.
- Only 47% of the investment is expected to come from the Federal Budget.



Source: Energy Ministry with CFE and LyFC data.

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



Why No Textbook Restructuring? (2)

- Interlocking Reforms Required
 - Factor Markets
 - Labor; fuels
 - Judicial
 - Mexico; India
 - Corporate Governance and accounting
 - China; Brazil; Mexico
 - Finance
 - China
 - Contrast w/ OECD
 - reform with “market-base” and “rule of law” systems already in place

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

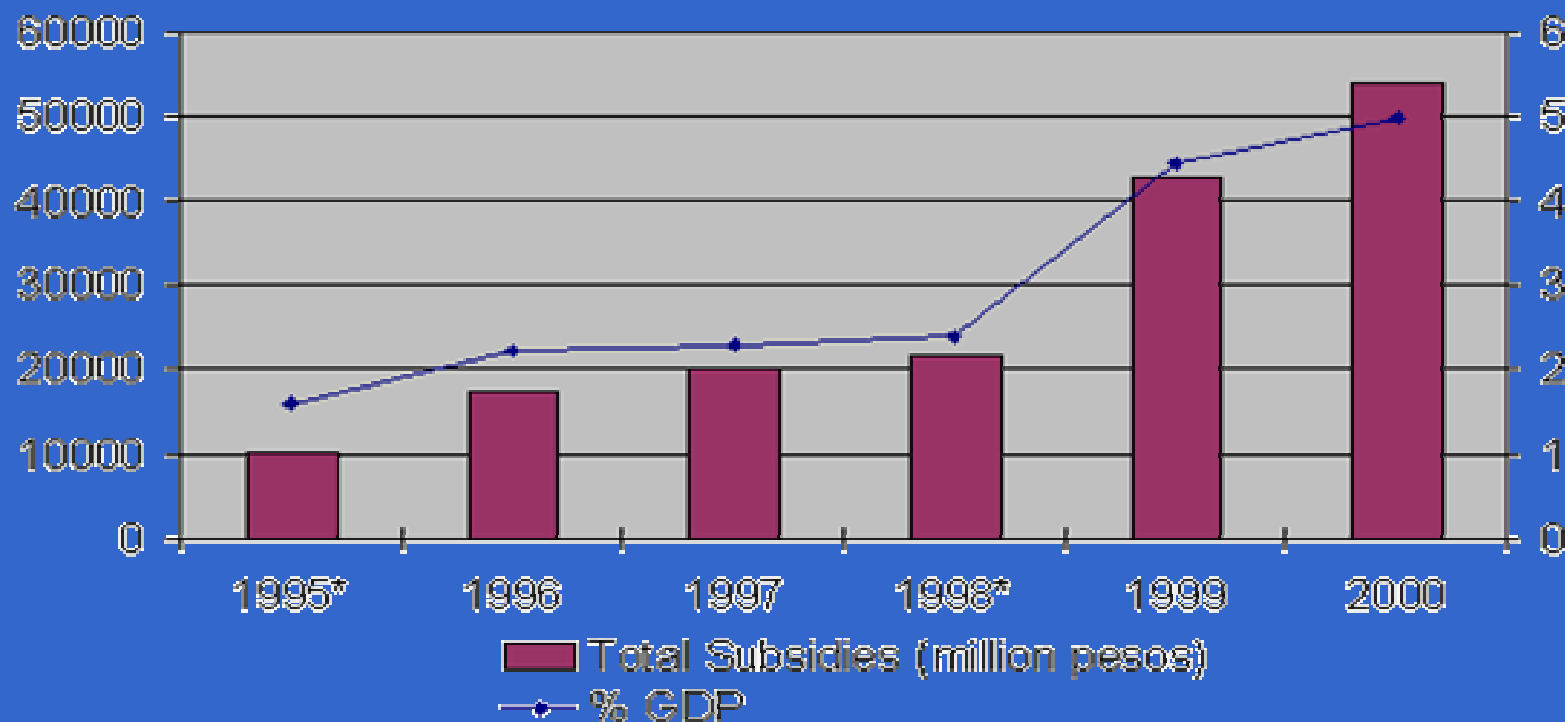
Conclusion:

Implications for Regulation

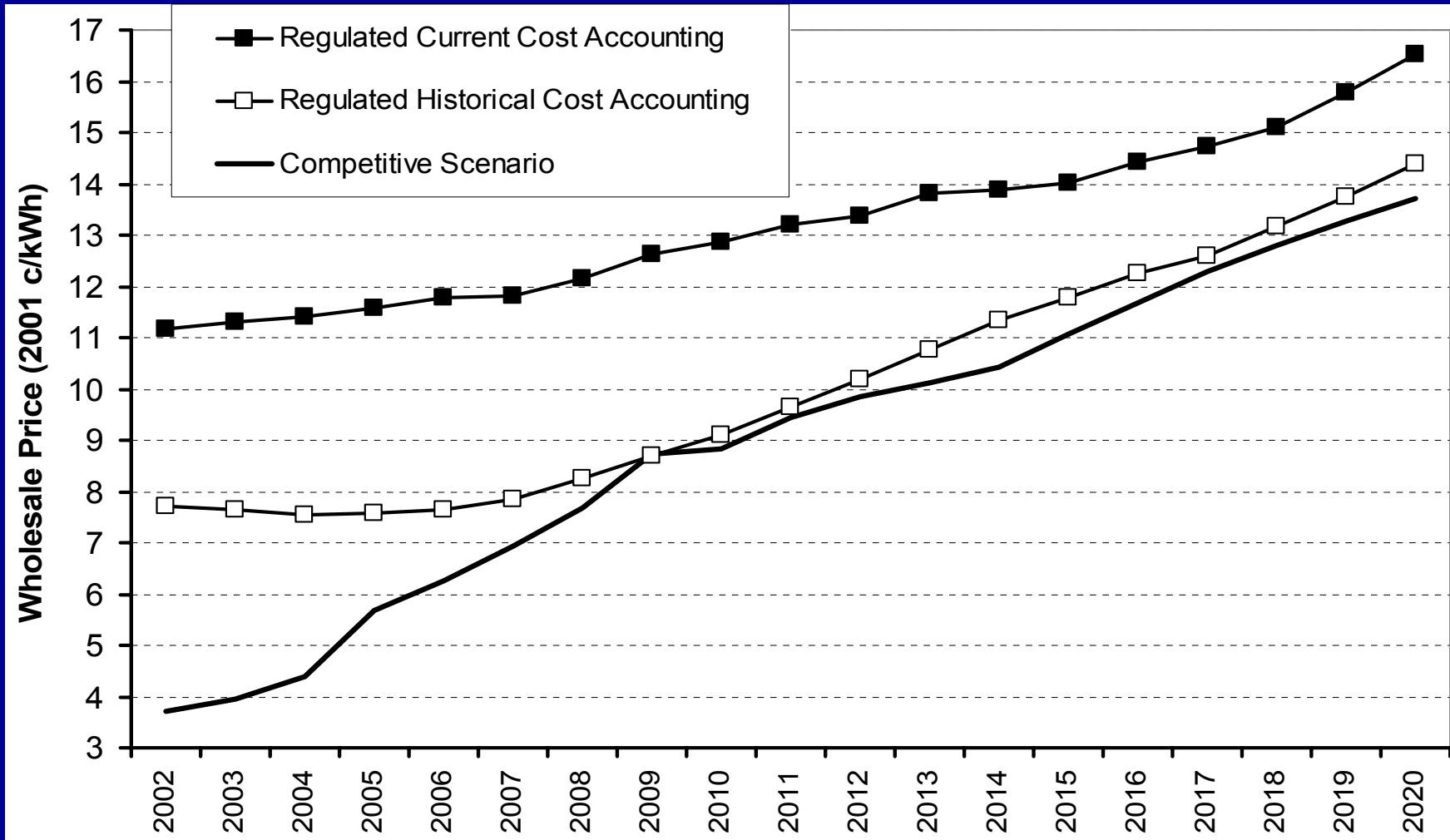
- Regulators overseeing hybrid markets, not markets
 - Key issues: governance, transparency, IPP tenders
 - Lesser issues: market power, congestion
 - Interplay with other reforms
- Regulators as “replacement” for the State
 - Example of tariff control
 - Especially in democratic countries?

Total Electric Subsidies in Mexico

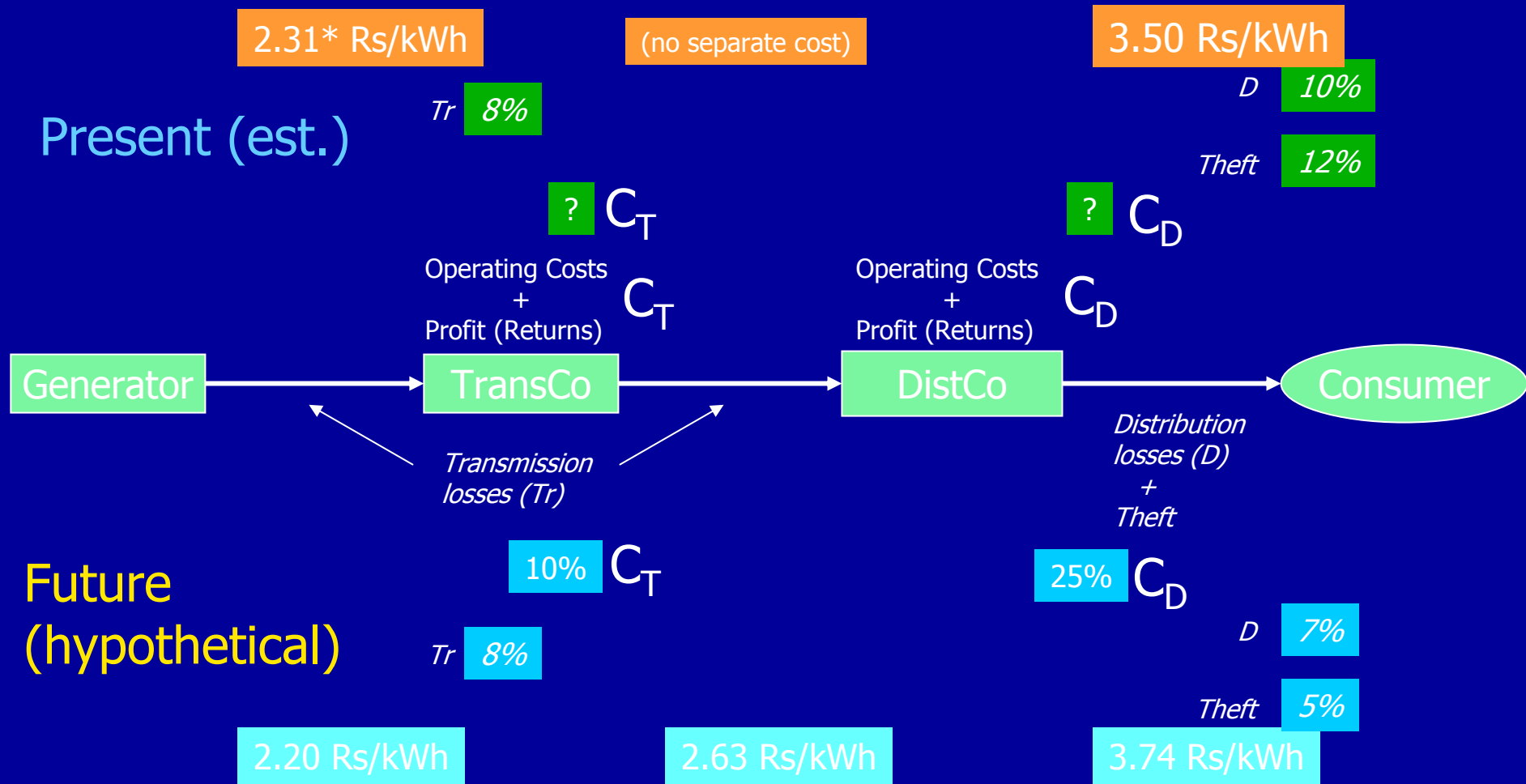
Total subsidies



Expected Future Costs of Power Delivery in South Africa



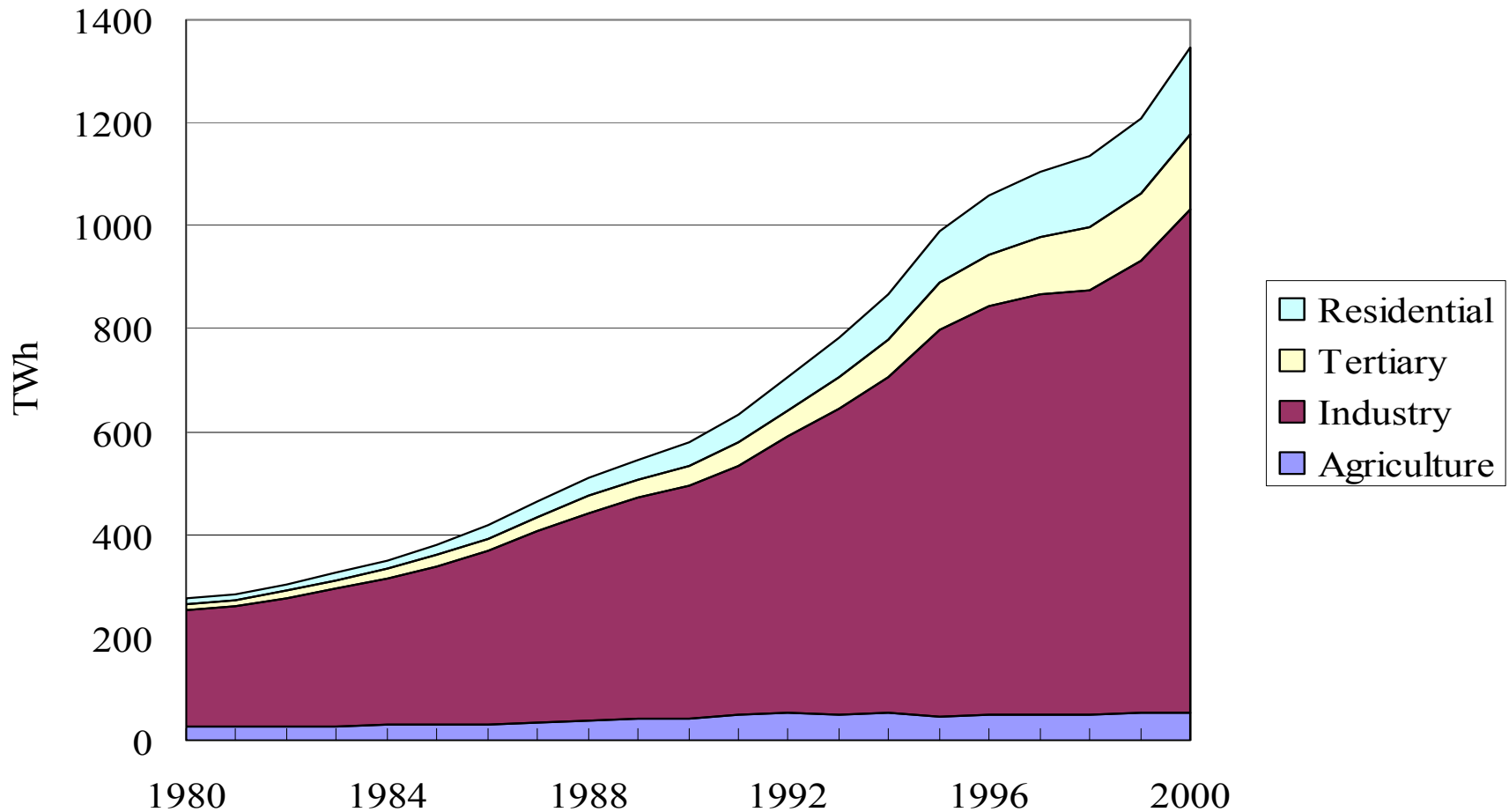
India: Present and Future Cost of Supply



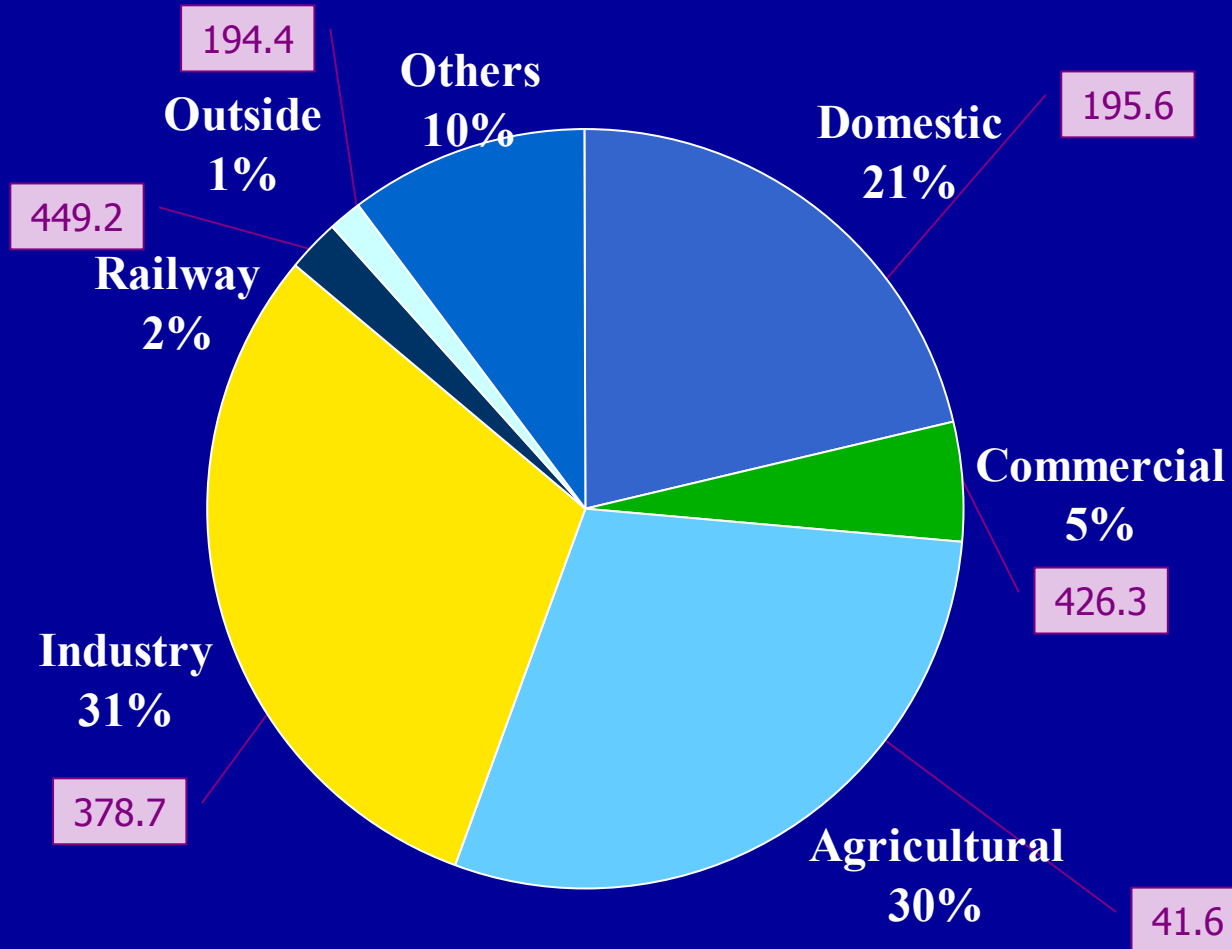
Unbundling "forces" profitability – raising costs

Power Consumption in China

Power Consumption Structure



Power Consumption and Tariffs in India



**Consumption
≈ 315 Billion kWh**

Prices

239.9 ps/kWh
(Average)
≈ 5.00 ¢/kWh

Source: Planning Commission