COMPETITION ISSUES IN CREATING AND RESTRUCTURING ELECTRICITY MARKETS

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ELECTRICITY RESTRUCTURING

- Electricity has been the last major sector to undergo deregulation and restructuring in most countries
  - More difficult case than airlines, telecom, other sectors
  - Not possible simply to liberalize electricity markets
    - Public ownership must be addressed
    - Distribution and transmission remain natural monopolies
    - Vertical coordination is necessary but will not be provided privately
- All counties have had difficult experiences with restructuring
  - UK was first but now about to adopt 3rd generation program
    - Significant problems with market power, pricing, investment incentives
  - US has patchwork of different and changing federal and state reforms
    - Record includes both significant successes and major failures
CHALLENGES FACING INDIA

• TERI Report identifies challenges facing reform in India
  • Challenges include all of the above…
  • Plus added structural difficulties
    • Traditional monopolies
    • Widespread public ownership
    • Thin wholesale markets
    • Barriers to new entry
  • Plus broader objectives including growth of consumption, rural electrification, infrastructure development
  • Plus various transitional issues involving billing, pricing, access, etc.
GOI POLICIES

- GOI policy toward electricity sector involves:
  - Vertical separation/unbundling
  - Encourage private investment and entry
  - Develop power trading market
  - Move toward multiyear tariff process
  - Foster retail competition in supply
  - Ensure equal access to transmission
POLICIES AND PROBLEMS

- Each of these policy elements has its own difficulties
- Will address four elements
  - Unbundling/vertical separation/access
  - Entry/power trading/wholesale market
  - Multiyear tariffs/incentive regulation/investment
  - Public vs. private ownership
- Will focus on implications for competition
  - Drawing on U.S. and other countries’ experiences
1.1: UNBUNDLING AND ACCESS

- Separation of generation from T&D necessary in order to
  - Foster competition in generation
  - Ensure equal access to grid
- UK and most countries have simply mandated divestiture
- US tried both equal access rule and functional unbundling
  - Neither resulted in equal access
  - Required full separation of control of grid (RTOs)
    - Some loss of coordination economies
- LESSON 1: Structural separation seems virtually necessary to alter behavior of players, but it has costs as well
1.2: UNBLUNDLING AND ACCESS

- Even with vertical separation, wholesale market competition not assured in most countries
  - In UK, only two large generators initially created
  - In US, rising concentration in regional markets, large national generation companies, mega-mergers, cross-ownership all blunt competition
- LESSON 2: Important to start with as many generators as economically rational and financially viable, then be sure to preserve them against inevitable forces for consolidation
1.3: UNBUNDLING AND ACCESS

- Most countries have encountered transmission constraints
  - Partly due to fact that grid developed to serve vertically integrated utilities rather than merchant power markets
- Congestion prevents outside generators from market
  - Effectively shrinks the market, conferring market power
  - Institutions intended to manage congestion, create more capacity have generally not worked well enough
- LESSON 3: Transmission congestion can create market power and undermine gains from liberalizing markets
2.1: ENTRY AND TRADING

- Entry into generation markets crucial to competition
- Experience varies
  - Much entry by efficient gas generators in UK
  - Some entry into US power markets, but many obstacles
    - One obstacle is siting
    - Another impediment is absence of dedicated customer base
    - Considerable concern about adequacy of incentives for investment
- LESSON 4: Regulatory and competition policy must ensure entry opportunities into wholesale markets
2.2: ENTRY AND TRADING

- Power trading markets have proven vulnerable to manipulation
- Part of problem is market design and rules
  - Example of California
    - System allowed for wash trades, artificial congestion, etc.
    - Exploited by Enron, Dynegy, Reliant, other traders
  - Other wholesale power markets have exhibited this, too
- LESSON 5: Liberalized markets provide opportunities to exploit system, so careful design is crucial
2.3: POWER TRADING

- Other part of problem is possibility of unilateral withholding
  - Electricity markets characterized by
    - Low demand elasticity
    - Low supply elasticity
    - Fluctuating demand
  - Predictable that demand will occasionally press on capacity
  - Then possible for any single generator to withhold part of supply and cause price to spike

- LESSON 6: Regulatory rules and market monitors probably best protection against unilateral withholding behavior
UNILATERAL WITHHOLDING
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The graph illustrates the market-clearing price in $/MWh from July 1, 2001, to August 10, 2001. The spikes indicate significant price increases. The highest price occurred on August 9, 2001, at $917.52 per MWh. There were also notable increases on August 8, 2001, at $194.18 per MWh, and August 10, 2001, at $180.25 per MWh.
3.1: INCENTIVE REGULATION

- Incentive regulation has become standard everywhere
  - From cost conservation standpoint clearly superior to ROR
  - Much evidence and experience in support of this
- First generation version was simple RPI – X formula
  - Widely used for distribution utilities, some transmission systems
- Concern that this might cause decline in service quality
  - Has led to common variation with quality standards included

LESSON 7: Quality standards important, perhaps essential, to preserve service quality
3.2: INCENTIVE REGULATION

- Latest concern is that incentive regulation may cause decline in long-run investment in infrastructure and quality
- US has experimented “disaggregated plans”
  - These use incentive regulation for operating costs
  - But more traditional prudence review, capital cost recovery for infrastructure investment
  - Under consideration in the Netherlands, elsewhere in EU
- LESSON 8: Disaggregated plans may be best suited to preserve incentives for long-term investment
4.1: STATE VS. PRIVATE OWNERSHIP

- Most countries retain public role for certain parts of sector
  - Often transmission remains public
  - Sometimes also the monopoly part of distribution
- Transmission management is a public good
  - Even private provision via joint venture would require regulation
  - Alternative US model of private Regional Transmission Organizations has encountered many difficulties
- LESSON 9: Transmission has properties of public good and may best be publicly provided
4.2: OWNERSHIP

- Other issues raised by competition between public and private entities in same segment (e.g., generation)
  - Priority in bidding, access to resources
  - Pricing
  - Deterrence to private entry
- Further issues in effort to apply incentive regulation
  - Lack of profit incentive complicates task of applying rewards and penalties
- LESSON 10: Joint public and private ownership complicates several aspects of market and regulatory reforms
CONCLUSIONS

- Report has identified key issues to be addressed both in general and also for reforms in India.
- Past experience suggests competition may be fragile:
  - Benefits of reform by no means assured.
  - Requires full attention of regulatory and competition authorities.
  - Otherwise reforms can be seriously compromised.
- Especially true since many competitive hazards are distinctive to electricity sector.