Lessons from Latin America: Towards a ‘Third Way’ of electricity market design

IEA Workshop

*Renewables in the Mainstream - Towards a "Third Way" for electricity market design?

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Global business advisory firm established in 1982

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- Dedicated to helping organisations protect and enhance enterprise value

Established in 1982

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Agenda

- Key issues on the way to deregulation: risk allocation and investment coordination and planning

- Toward a ‘hybrid’ market approach: lessons from Latin America

- Conclusion: toward a ‘third way’ for electricity market design?
Key issues on the way to deregulation: Risk allocation and investment planning
From regulation to ‘pure markets’, a range of approaches to allocate risks

- Infrastructure type regulation (c.f. telecoms)
- PPAs, single buyer (c.f. Ontario, UK?)
- Hybrid models (Latin America, UK?)
- Improved energy and capacity market
- Energy only market

Generator’s risk

Investment risk transferred to customers

Investment risk on generator
Global mapping of electricity market structure

Vertically integrated monopolist
Vertically integrated monopolist + IPPs
Single Buyer as a national genco, disco or disco, or a combined notional genco-transco or transco-disco + IPPs
Many discos and gencos, including IPPs, transco as a Single Buyer with Third-Party access
Power market of gencos, discos and large users, transco and ISO

Source: FTI-CL Energy analysis based on various sources including World Bank
Role of public sector in managing risks associated with power generation

*Economic theory suggests that risks should be allocated to those parties best able to manage them – Implications for power investments*

<table>
<thead>
<tr>
<th>Key risks of generation investment</th>
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**Planning and licensing risk**
=> Ensure predictable and credible energy policy, streamline planning and licensing procedures

**Construction risk**
=> To be managed by investor / passed on to EPC contractor

**Operation risk**
=> To be managed by plant operator

**Market risk: ‘Missing market’ for long term electricity price risk hedging**
⇒ Natural counterparty is supplier with ‘sticky’ customers, vertical integration and diversification of mix are usual hedging strategies
⇒ Design power market that does not rely purely on scarcity pricing and price volatility to stimulate investment
⇒ Consider additional risk transfer / hedging mechanisms to reduce hurdle rates and costs to consumers

**Policy and regulatory risks: Assess impact of interventions to support specific technologies**
Unpredictable merit order changes leading to fall in plant revenues because of policy intervention
⇒ Ensure that deployment of clean technologies is predictable and at a pace compatible with amortization of other plants
⇒ Give visibility on CO2 policies
⇒ Develop coordination mechanisms to ensure that transition does not create stranded costs
Toward a ‘hybrid’ market approach: Lessons from Latin America
Latin America – The two waves of market reforms

1st wave of market restructuring
- Early 1980s: vertically integrated monopolies.
- From 1982 onward: partial liberalization with centralized cost-based dispatch; prices for small consumers remain regulated.
- Policy discontent in the early 2000s:
  - Dissatisfaction with price regulation.
  - Volatile spot prices failed to stimulate timely investment; rotating blackouts in some countries.
  - No stable long-term generation revenues for project-finance of new capacity.

2nd wave of market restructuring
- Early 2000s: introduction of hybrid markets with long term contracts (LTCs) to support and coordinate investment. Rationale included:
  - Coordinating investment through a competitive process (auctions);
  - De-linking of investment from volatile spot prices;
  - Reducing risks for new comers and facilitating project financing through LTCs;
  - Allowing enough time to develop capacity through forward auctions reflecting anticipated need.

Timeline of regulatory reforms in South America

Source: Mastropietro et al.
<table>
<thead>
<tr>
<th>Country</th>
<th>Brazil</th>
<th>Chile</th>
<th>Peru</th>
<th>Colombia</th>
</tr>
</thead>
<tbody>
<tr>
<td>Degree of centralisation</td>
<td>Joint auctions by distribution companies centrally organised.</td>
<td>Disco(s) organise and manage their auctions, possibility of joint auctions.</td>
<td>Disco(s) organise and manage their auctions, possibility of joint auctions.</td>
<td>Joint auction to ensure reliability, closing gap between supply and demand organised by the Regulator</td>
</tr>
<tr>
<td>Buyers</td>
<td>Regulated users.</td>
<td>Regulated users.</td>
<td>Regulated users, but free consumers can be included.</td>
<td>All consumers.</td>
</tr>
<tr>
<td>Sellers</td>
<td>Separate auctions for existing and new capacity</td>
<td>Existing and new capacity in the same auction.</td>
<td>Existing and new capacity in the same auction</td>
<td>Existing and new capacity in the same auction</td>
</tr>
<tr>
<td>Load forecast responsibility</td>
<td>Disco(s) inform on load forecasts in each centralised auction to supply regulated market.</td>
<td>Disco(s) are responsible.</td>
<td>Disco(s) are responsible.</td>
<td>Regulator and planner provide demand, auction bridges the total system gap.</td>
</tr>
<tr>
<td>Delivery date</td>
<td>Existing: few months - 1 year New: 2-5 years</td>
<td>2-5 years</td>
<td>3 years</td>
<td>3 to 7 years.</td>
</tr>
<tr>
<td>Energy policy decisions</td>
<td>Specific auctions for technologies and special projects.</td>
<td>All technologies compete together.</td>
<td>Separate auctions for renewables.</td>
<td>All technologies compete together.</td>
</tr>
<tr>
<td>How often are auctions organised</td>
<td>Regular auctions to contract new capacity, government can organise additional auctions whenever needed.</td>
<td>Disco(s) decide.</td>
<td>Disco(s) decide.</td>
<td>At planner’s discretion, whenever there is a foreseen gap between future demand and supply.</td>
</tr>
</tbody>
</table>

- In the same auction conventional and RES-E generation technologies seem to compete in a similar range of costs for new capacity additions.
- However, the methodology used for firm energy certificates de-rating for RES is under review.
Latin America – Lessons from ‘hybrid’ markets

- Latin American power sectors have evolved in the past decade toward various forms of ‘hybrid models’ combining a role for the spot market and for long term contracts (LTCs) in order to separate the following:
  - Short term system optimization (dispatch) based on spot market prices.
  - Long term investment decision largely driven by auctioning of LTCs.

- In practice, there are significant differences in implementation across countries:
  - Brazil: centralized scheme with a single auction to contract distribution company’s needs.
  - Chile / Peru: decentralised scheme where distribution company auctions their demand.
  - Colombia: auctions whenever demand not covered by capacity.

- Whilst auctions for LTCs attracted significant interest of investors in a range of technologies, ... the jury is still out in terms of the effectiveness of the auction mechanisms to attract least cost green-field generation (or demand resources) and price it efficiently; key issues include:
  - the type product to be auctioned – energy, capacity or some hybrid product,
  - how far in advance of delivery to run the auction,
  - how much volume to auction and how frequently to run the auctions, and
  - the auction design: how to efficiently allocate and clear prices

- Of particular importance is the definition of roles and responsibilities for planning (load forecast), contracting and running the auctions:
  - Incentives to minimize costs, etc.
  - Independence and risk of policy interference and regulatory capture
Conclusion: toward a ‘third way’ for electricity market design?
Implications for Europe: Toward technology neutral auctions for clean and thermal technologies?

- Reforms of renewables support schemes suggest a greater role for support schemes with payments based on installed capacity (MW) as opposed to feed in tariffs (MWh produced) in order to limit distortions on the energy market.

- Reforms to introduce capacity remuneration schemes for thermal plants decouple plant revenues from actual production in MWh.

Possible convergence toward a harmonized procurement scheme through auctions of technology neutral long term contracts.

- Spot power market prices remain key for operational / dispatch incentives.
- Fixed cost recovery and long term investment decisions increasingly decoupled from spot market dynamics and based on auctions / capacity remuneration schemes.
A ‘third way’ for electricity market liberalization: Competition in two steps

**Competition “for” the market**

- Tendering of long term capacity contracts
- Can be technology neutral or specific
- Puts competitive pressure where it matters: CAPEX
- Can be used to stimulate new entrants and development of competitive market
- Ensures coordinated system developments

**Competition “in” the market**

- Well integrated and liquid forward, day ahead and intraday markets
- Optimizes short term dispatch and minimizes costs for consumers
- Level playing field with balancing obligation for all
- No distortions as subsidies / support not based on production
- Supports retail competition and development of demand response

**Investment planning (years ahead)**

**Operations planning (days /hours ahead)**
Thank you for your attention

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