Market and Monopoly:

Use of Market Power in the Nigerian Electricity Power Market

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Outline

- Review of International Market
- Electricity Market Reform in Nigeria
- Role of PHCN
- Issues and Challenges



Review of International Experience

Market	Participation	Demand side bidding	Pricing
England and Wales	Mandatory	No	Ex ante
NordPool	Voluntary	Yes	No
Spanish Electricity Market	Voluntary	Yes	No



Review of International Experience

NordPool (Nordic Power Exchange)

- NordPool is a voluntary electricity exchange open to traders from Norway, Sweden, Finland and parts of Denmark.
- As of 1997, over 40% of electricity trade in the area was handled by the pool.
- There is a spot market, Elspot, and a futures market, Eltermin, which deals with futures contracts for up to three years ahead.Elspot is a one
- day ahead auction market. Bids are made for each of the twenty four hourly markets and consist of price-quantity pairs specifying how much the bidder is prepared to buy or sell at different prices.
- Supply and demand schedules are constructed from selling and purchasing bids and, in turn, this determines a market clearing price. Bids are firm, entailing a commitment to physical delivery or withdrawal.
- All scheduled bids are settled at the market clearing price.
- A balancing or regulation market operates in each NordPool member country to manage transmission bottlenecks and imbalances resulting both from trade in the pool and from bilateral trade.



Review of International Experience

Spanish Electricity Market

- The general architecture of the Spanish market (Omel) is similar to NordPool, based **on voluntary participation** and firm bids.
- However, it incorporates an intra-day spot market that allows traders a sequential adjustment of their trading portfolios at times increasingly closer to the time of operation.
- The one-day ahead market sets prices for each of the twenty-four hourly periods of the next day. Generators and buyers send bids to the market operator who matches the bids.
- If the resulting basic daily schedule is not feasible due to transmission constraints, the market operator incorporates offers for congestion relief to establish the definitive feasible daily schedule



Trading outside the Pool (Bilateral Trading)

- There is a growing consensus that electricity trade should be allowed to take place outside organised markets.
- Bilateral contracting is expected to be efficient since it is a standard, if not the unique, way of trading in many markets.
- Bilateral trading is, by definition, more flexible than centralised pool trading since it may co-exist, and it does in practice, with a non-mandatory pool.
- A non-mandatory pool also lessens concerns about discrimination and is a necessary condition for individualised pricing and provision of security and reliability, adapted to individual consumer needs.
- In bilateral trade systems, market and system operation are often conducted by separate organisations.
- The system operator (SO) assumes most technical co-ordination functions for balancing of the system, including time of operation dispatch..



Disadvantages of bilateral Trading

- Bilateral contracting in electricity markets has, however, been criticised on three counts:
 - a. First, bilateral contracting is not compatible with a centralised optimisation of dispatch. It does not guarantee dispatch based on a merit order of bids or costs. However, as in most other markets, the lack of a central optimiser does not preclude markets from being efficient.
 - b. Second, there are concerns that electricity prices to end users may not be transparent and/or pool prices may be distorted if a large fraction of traders enters into bilateral contracts. Setting regulated tariffs to end users when the price of wholesale electricity is not clear may be difficult.
 - c. Third, long-term bilateral contracts may facilitate the exercise of market power, if market players already enjoy market power. In particular, bilateral contracts can result in an implicit form of vertical integration between generators and distributors in systems where explicit vertical integration is not allowed.



Problems in Electricity Market: Before Reforms

- limited access to infrastructure, low connection rates
- inadequate power generation capacity
- inefficient usage of capacity
- lack of capital for investment
- ineffective regulation
- high technical losses and vandalism
- insufficient transmission and distribution facilities
- inefficient use of electricity by consumers
- inappropriate industry and market structure
- unclear delineation of roles and responsibilities



History of Reforms

- power sector reform began in 2000
- Electric Power Implementation Committee (EPIC) set up
- policy framework NEPP 2001
- legal and regulatory framework EPSR Act 2005



Aims of the Reforms

- improve efficiency and performance
- ensure transparent and responsible management
- limit political interference
 - eliminate government's involvement in utility management
- promote Private Sector Participation
 - management and technical operations
 - encourage private investment in generation to address inadequate supply
 - ensure level playing field for all investors
 - release government funds to finance core activities



Model for the Reform

type of market

- competitive wholesale market and retail competition in the long term.
- multi-buyer model (hybrid during a transition period)
- private sector driven
- cost reflective market structure
- encourage full competition in the long term.
- Market Operator to be ring-fenced semi-autonomous entity during transition



Structure of Nigerian Power Mkt.



Role of PHCN as System Operator

Arguments against a monopoly for the System Operator

- A key and partly unsettled issue is defining the role of the system operator in managing transmission in the long-term, that is, the planning and implementation of investment in the network.
- There is a broad consensus that the system operator (or other appropriately designed entity) needs to retain some responsibility in grid planning and augmentation.
- Incentives for grid investment may be distorted in a number of ways:
 - Market power may reduce incentives to invest
 - The risk of free riding may discourage investment
 - Incentives for maintenance and replacement of assets may be weak unless appropriate rewards and penalties for security and reliability are designed.



Role of PHCN as System Operator

Arguments for a monopoly for the System Operator

- the system operator can be defined as a transmission monopoly
- transmission monopoly that owns the whole transmission network and takes on the obligation to provide unlimited transmission service, that is, the services that are required for effective system operation.
- This is the approach taken in most competitive electricity systems in Europe including the UK, Norway, Sweden, Finland and Spain.
- In this approach, the system operator is responsible for planning grid augmentation and managing it. In practice, this approach corresponds to the ownership separation model.



Do IPPs and Industry present a Threat?

- IPPs as profit-driven and private sector players are motivated primarily by economic gain
- The issues they consider are economic:
 - Reliability
 - Least cost
- They do not present a threat but a challenge.
- They need PHCN but they need it:
 - Highly reliable (work on transmission infrastructure)
 - Neutral
 - Economically Efficient (market and service driven)