Forward Contracts and Capacity Markets: High Powered Incentives or Assets to be Stranded?

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Overview

- Morgan Stanley's Position
- Regulated Markets
- Competitive "Energy Only" Markets
- Basic Mismatch between Developers and Buyers
- Allocation of Risk
- Risk Hedging
- Specific Example of Risk Hedging
- During the Hedging Period
- Hedging "Discovers" the Market
- Not Perfect, just Optimally Managed

Morgan Stanley's Position on Market Design

- "Energy-only" – short hand for a market design relying on:
  - A well-structured spot market
    - Day-ahead and real time
    - Locational prices
    - Well-considered price mitigation rules
  - "Mandated" forward contracting for LSE's
    - Credit adequacy standards
    - Full transfer of risk
      - Even if caps are adjusted, raised, or removed
  - Most efficient market design to:
    - Ensure reliability margins are met
    - Protect buyers from extreme price volatility
    - Ensure reliable supply for consumers at the lowest cost
    - ***Capacity investment at the right level, mix and locations***

In Regulated Markets

- Customers are price takers (therefore risk takers)
- Planning and construction horizons extremely long
  - Eight to ten-year-plus lead times for intermediate and base load
  - No real financial incentive to shorten
- Regulatory guarantee of a “fair return” puts risk on customers
- Sub-optimal plant mix may exist for long periods of time, at customers’ expense
- Perverse economic outcomes and price signals
  - Short supply: small rate base, low base rates, high lambda, push for load management
  - Excess supply from plant additions: large rate base, high base rates, low lambda, push for market expansion
- Primary incentive in regulated markets: manage the regulators

Competitive "Energy Only" Markets Mean Market Accountability

- Spot market defines spot prices
- Forward contracts define longer-term forward market
- Market dictates quantity, mix , and location (with LMP)
- Through forward contracting, market distills supply-demand balance into a planning signal called "price"
- Risk lies with sellers, who then hedge that risk
- Risk hedging creates an explicit link between development / investment and market price

Power Buyers VS Developers – Basic Mismatch

- LSEs Generally Contract to Buy
  - Shorter tenor – 2 to 3 years
  - Smaller sizes
  - Competitive price
  - Low risk
  - When prices are viewed as low
- Developers Generally Contract to Sell
  - Long tenor – recover investment – 8 to 10+ years
  - Larger sizes – economies of scale
  - Fixed payment per month no matter how often they run
  - Certainty of return
  - Low risk
  - When prices are viewed as high
- An intermediator can manage this mismatch, and risk

Allocation of Risk in a Hedged Forward Market

- Intermediator handles risk
  - Price risk
  - Credit risk
  - Operational and dispatch risk
  - Efficient dispatch into pool and payments from pool
- Best outcome achieved when expertise & functions match
  - Developers do what they do best : build and operate plants
  - Intermediators do what we do best: manage risk
- Role of the market is to allocate risk in quantity and type to entities who are prepared to, and able to, bear that risk

Risk Hedging – the Explicit Market/Investor Bridge

- Risk lies with sellers, who then hedge that risk
- Intermediators such as MS will make a competitive market approximately double the length of forwards
  - EG, would make a 6-year market on the back of 3-year forward contracts
- This could increase to 8 to 10 years as market develops
- Physical and/or financial, and with appropriately different structure (size, fixed vs variable, pass through of fuel etc)

Long Term Hedging Process - One Example

- Developer looks to hedge a gas fired intermediate project in PJM
- Intermediator sells to LSEs fixed-price as-metered forwards at $70/MWh for three years
- Intermediator sells to Developer a toll tailored to the characteristics of the plant he wants to build, for six years
- Assume a 7 heat rate toll, for which MS pays $7/kw-month
  - A 7 heat rate gas plant with $7/mmBTU gas has a running cost of around $50/MWh. If 5x16 market is $70, capacity piece is $20/MWh
  - ($20 x 340 hours/mo)/1000 = $6.80/kW-month (about $7)
- For a 200 MW plant, revenue stream = 200 x 1000 x $7 = $1.4 million/month, or about $17 million/year
- Developer is hedged with a fixed revenue stream for six years

During the Six-Year Hedge Period

- If prices are stable
  - Developer may investigate further development
  - When he (or others) seek a new hedge, the forward market may support that investment, or may show lower prices
  - In either case, subsequent development will happen (or not happen, or get modified) based on now-current forward prices
  - Developer extends existing hedge
- If prices trend upward
  - Developer may invest in another project, as well as extend his existing hedge at the higher forward prices
  - Other investment will be incentivized
  - As each subsequent investor hedges, the forward market will respond via the price offered for the next hedge
  - As investment continues, the forward market, and associated hedge prices, will eventually signal equilibrium

During the Six-Year Hedge Period

- If prices trend downward
  - Hedges available to would be investors no longer support further development of that form
  - Development either ceases or takes on some other form that is supported by the forward market at that time
  - As Developers/Investors continue to look for development opportunities, and intermediators continue to look for hedging opportunities, forward market are continually being "discovered"
- Developer receives certain revenue stream regardless of market

Hedging Process “Discovers” the Market

- Hedging process acts as a constant feed-back loop to existing and would be investors/developers
- Existing hedges should be dynamic, not static (continue to extend hedges periodically)
- Feedback process tends to stabilize markets over the long run, at the “right” amount of investment according to prices
- Mismatches between supply and demand are minimized

Market is Not Perfect, Just Optimally Managed

- Can't predict recessions
- Investment is lumpy
- When new investment comes on, there may be length
- Investors are probably smarter now than they were
  - Irrational exuberance?
- The decision to hedge connects investment decisions to market realities
- Who takes the risk? Those who can and should