FERC’s Market Manipulation Rule: Impact on FTRs and the Virtual Market

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Presented by:
John Tsoukalas

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Objectives

This discussion should show us how to:

- Recognize the trading behavior related to FTRs and virtual bids that can trigger a FERC investigation
- Understand the economics behind the potential manipulation of FTRs with virtual bids
- Identify effective compliance policy regarding FTRs and virtual bids
Agenda

Behavior that can be Viewed as Manipulation

Economics of FTRs and Virtual Bids
Agenda

Behavior that can be Viewed as Manipulation

Economics of FTRs and Virtual Bids
Three types of behavior can trigger a manipulation

- **Outright fraud:**
  - Informational Fraud: lying to the market
    - *Example: submitting a false report*
  - Fictitious Transactions: selling “snake oil”
    - *Example: circular scheduling to increase congestion*

- **Withholding:**
  - Traditional concept of market power; reducing supply to increase price
    - *Example: offering a unit above cost to increase LMPs*

- **Uneconomic behavior:**
  - Intentionally “losing money” on a trade or position to realize a gain on a benefiting position
  - “Losing money” in the economic sense, not accounting sense
  - Trades lose money all the time; proving intent poses challenges
    - *Example: loss-making virtual bids that benefit an FTR position*
A framework to analyze cause & effect

Manipulation Triggers
- Uneconomic Trading
- Outright Fraud
- Exercise Market Power

Nexus
- Biased Market Outcome

Manipulation Targets
- Financial Derivatives
- Physical “At Index” Cross-Market Positions

Manipulation Profits
Analysis of an alleged manipulation

Begin with a Presumption of Transactional Legitimacy

- **Trigger**
  - Do the actions in question involve fraud, uneconomic behavior, or an abuse of market power?
    - Yes
    - No
    - **Legitimate Business Purpose**
  - **Target**
    - **No Manipulation Likely**
      - **No**
      - **No Manipulation**
      - **Yes**
    - **Yes**
    - **Nexus**
      - Does a sufficient nexus exist between the manipulation trigger and target?
        - Yes
        - No
        - **No Manipulation**
      - **Intent**
        - Is there evidence of repeated or anomalous behavior and/or objective evidence of intent?
          - Yes
          - Legitimate concerns of manipulative behavior
          - No
          - **No Manipulation**
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Behavior that can be Viewed as Manipulation

Economics of FTRs and Virtual Bids
A model: The interaction of virtual bids and FTRs

The following economic model assumes a trader places virtual load (a.k.a., “DECs”) at the sink of its FTR position:

- We begin by describing the trader’s decision to place virtual bids on a stand-alone basis
  - Initial simplifying assumption of only one virtual trader
  - Reality check afterwards (very important)
- Next, we see how the addition of a FTR affects the trader’s behavior
  - The profitability of the manipulation is shown to depend on the size of the FTR position
- The model illustrates the level of virtual bidding that suggests manipulation of the FTRs, But...
- Must be corroborated with additional evidence of intent
The economics of trading virtuals

- Virtual supply and demand (collectively, “virtuals”) are valuable instruments in the market for several reasons:
  - The ability to hedge or speculate on price differences between the day-ahead and real-time at a particular node
  - Added liquidity can mitigation market power concerns
  - Generation owners can hedge against the risk of a unit outage

- A trader bids DECs if she believes that the day ahead LMP will clear below the real time LMP in a given hour at that same location:
  - A trader “virtually” buys MWs in the day ahead market, and sells them back to herself in the real time market
  - Payment to a DEC bid = \((\text{LMP}_{RT} - \text{LMP}_{DA}) \times \text{MW}\)

- DECs tend to raise congestion prices in the day ahead market and to lower congestion prices in the real time market:
  - DECs are price setting transactions
  - Converge LMPs between the day ahead and real time
  - This can be used to trigger a market manipulation
The convergence principle of virtual bidding
The convergence principle of virtual bidding
The derived demand for decremental bids

\[ P_{RT}^0 - P_{DA}^0 \]

The Initial Spread before Any DECs Are Placed

\[ X = MW \]
The derived demand for decremental bids

The Initial Spread before Any DECs Are Placed

$P_{RT}^0 - P_{DA}^0$

The Quantity of DECs Needed for Convergence

$X = MW$

$X_{\text{max}}$
The derived demand for decremental bids
The paradox of convergence for virtual bids

Maximum Revenues from Virtual Trades

Total Revenues of Virtual Trades

Profit Maximizing Quantity of DECs
Marginal losses on DECs beyond $X^*$
The addition of FTRs to the virtual trader’s portfolio

- FTRs (a.k.a. “CRRs” or “TCCs”) give market participants the ability to hedge or speculate on price differences between the day ahead prices at two locations:
  - A FTR pays its holder the difference in the day ahead congestion prices between the FTR’s “source” and “sink”
  - Payment to the FTR = \((P_{\text{sink}} - P_{\text{source}})\)*MW
  - FTRs are price taking instruments

- If the FTR sinks at the same point where the virtual trader places DECs, the value of the FTR will progressively increase as more DECs clear due to an increase in the day ahead congestion price:
  - FTRs can be the target of a manipulation triggered by DEC bids
Total revenues: Placing DECs at a FTR sink
Placing DECs at sink raises FTR value
Convergence brings FTR value to $FTR(X_{\text{max}})$
Total revenues from DECs and FTR combined

Diagram showing the relationship between total revenues, demand, and marginal revenues in the context of DECs and FTRs.
Maximizing total portfolio value lowers virtual gains
Greater FTR leverage incentivizes virtual losses

Greater FTR leverage incentivizes virtual losses

[Graph showing economic relationships related to FTRs and virtual trades]
Greater FTR leverage incentivizes virtual losses
Trader seeks to clear DECs in excess of $X_{\text{max}}$
Losses on virtuals increase profit of total portfolio
Final Thoughts

- Compliance policy can be extreme:
  - Prohibiting all virtual trading at nodes with FTR positions will eliminate the chance of this type of violation
  - This will also eliminate legitimate and profitable virtual trades
  - Such a result would harm the virtual market by reducing liquidity

- Beyond FTRs and virtual bids:
  - The framework discussed here can be applied to analyze the cause and effect relationship in any possible or alleged manipulation
  - Identifying the “nexus” between different positions is key to developing effective compliance policy
  - There are normal degrees of losses inherent to all risk-taking behavior:
    - In a fair market half of all trades lose money
    - Example: Guessing wrong on the DA-RT spread with a virtual position
    - Monitor for repeated and concentrated uneconomic results

- Danger of a “per se” standard:
  - Enforcement posture of the FERC is growing more aggressive
  - Is proof of intent to benefit another position enough?
Mr. John Tsoukas is an Associate at The Brattle Group with experience across a broad range of issues in electric utility economics. These include electric utility strategic planning, manipulation across electricity markets, and electric transmission development. He has assisted electric utility clients in developing their strategic plans for participation in wholesale markets and in confronting regulatory uncertainty. John is engaged with utility clients to determine their regulatory exposure due to bidding practices in the wholesale electricity markets. He has helped develop tests to detect the presence of uneconomic behavior and to assess the potential price distortion caused by this behavior. He is assisting several clients in defending against investigations or enforcement actions for allegedly manipulative behavior. He has supported the development of testimony to assist regulatory agencies with their design of appropriate tariff provisions to properly allow for adequate cost recovery while identifying and mitigating potentially manipulative behavior.

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