



Northfield Summer Seminar
Newport, RI
June 8, 2007

**Implied Risk Acceptance
Parameters in the Execution of
Institutional Equity Trades**

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INSTINET.

Objective

- Assess the risk-aversion implicit in the execution of institutional trades

Methodology

- Generate implied RAPs from Instinet's database of institutional trades

Sample

- 21,959 institutional orders between 10/1/06 and 4/20/07

Sample Characteristics

- Algorithmic trade executions
- Orders without limits (avoid selection biases)
- Fully completed orders

Grouping

- We utilize 3 different strategies which are chosen by the trader as a proxy for the level of risk aversion
- These strategies are distinct in terms of the amount of market risk associated with them

Results Measurement

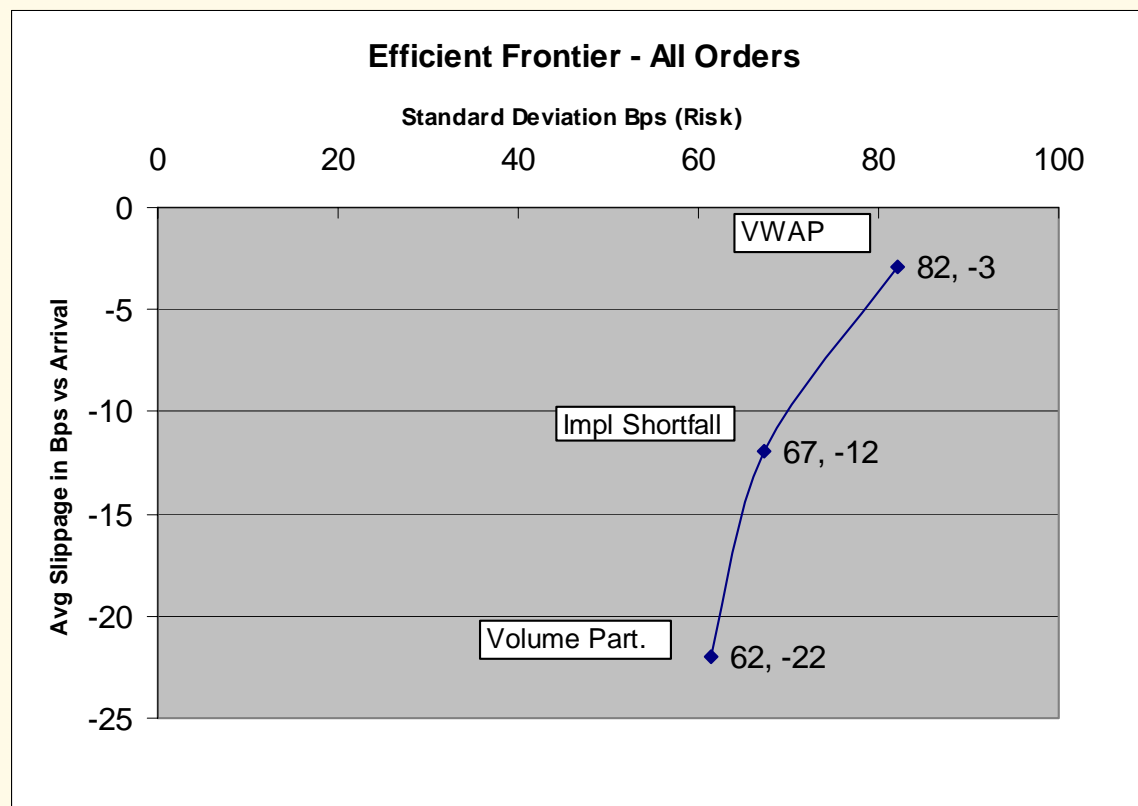
- We use 'implementation shortfall,' i.e. difference b/w volume-weighted execution price and last market print at order arrival

Order Strategy Groupings

- **Volume Participation***: Most aggressive trading style, least market risk exposure
- **Implementation Shortfall ("Wizard")**: Medium aggressive trading style, medium market risk exposure
- **VWAP**: Most passive trading style, highest market risk exposure

* Avg Volume Participation Rate is 26%

<u>Strategy</u>	<u># Orders</u>	<u>Average % Avg Daily Volume</u>
VWAP	15,847	0.92%
Impl. Shortfall	4,316	1.95%
Volume Part.	1,796	2.3%



Utility (Northfield Definition)

$$U = \text{alpha} - \left[\frac{\text{STE}^2}{\text{SYSRAP}} + \frac{\text{UTE}^2}{\text{URAP}} \right] - \text{Cost} - \text{Penalties}$$

Utility (adapted for this analysis)

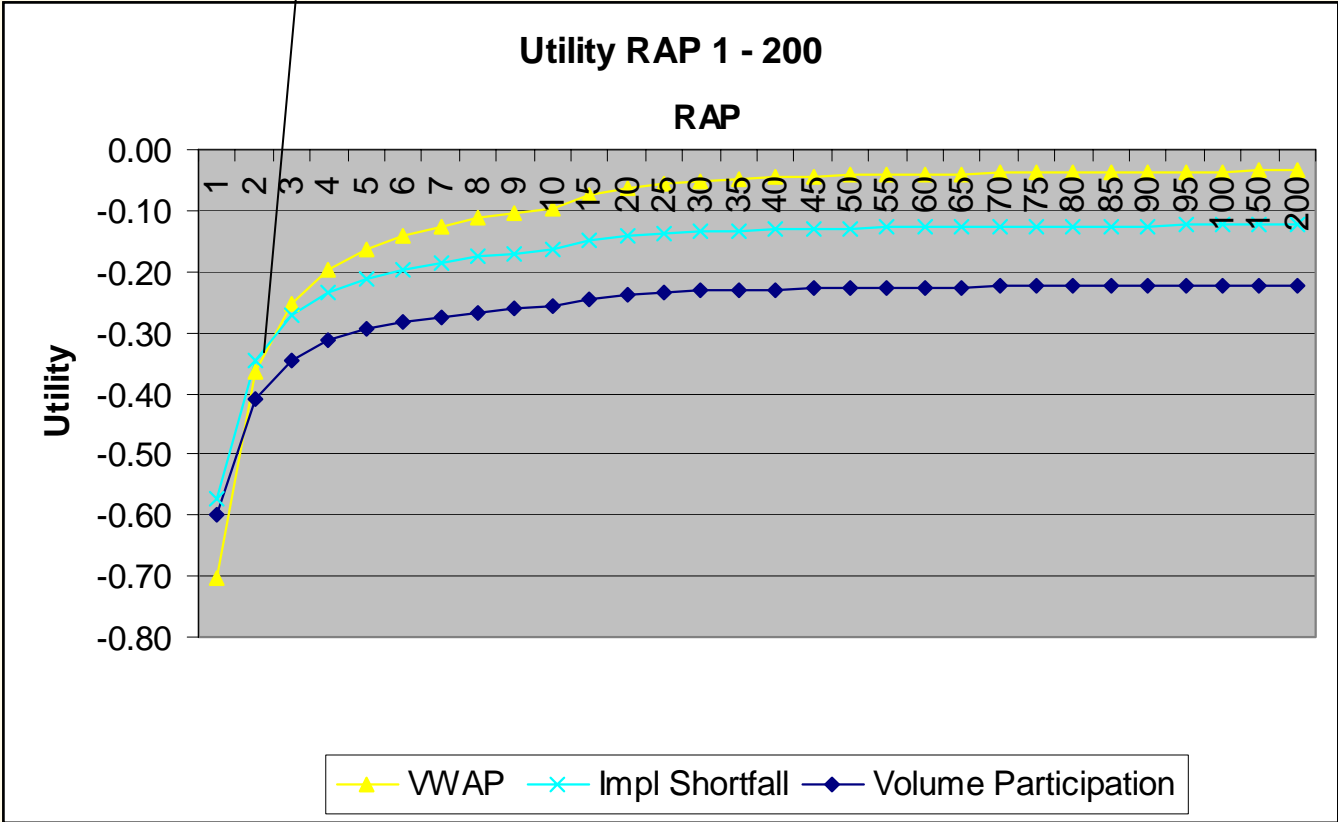
$$U = (0 - [\text{StdDev}^1{}^2 / \text{SYSRAP}/100] - \text{abs}(\text{Slippage}^1)) * 100$$

Note

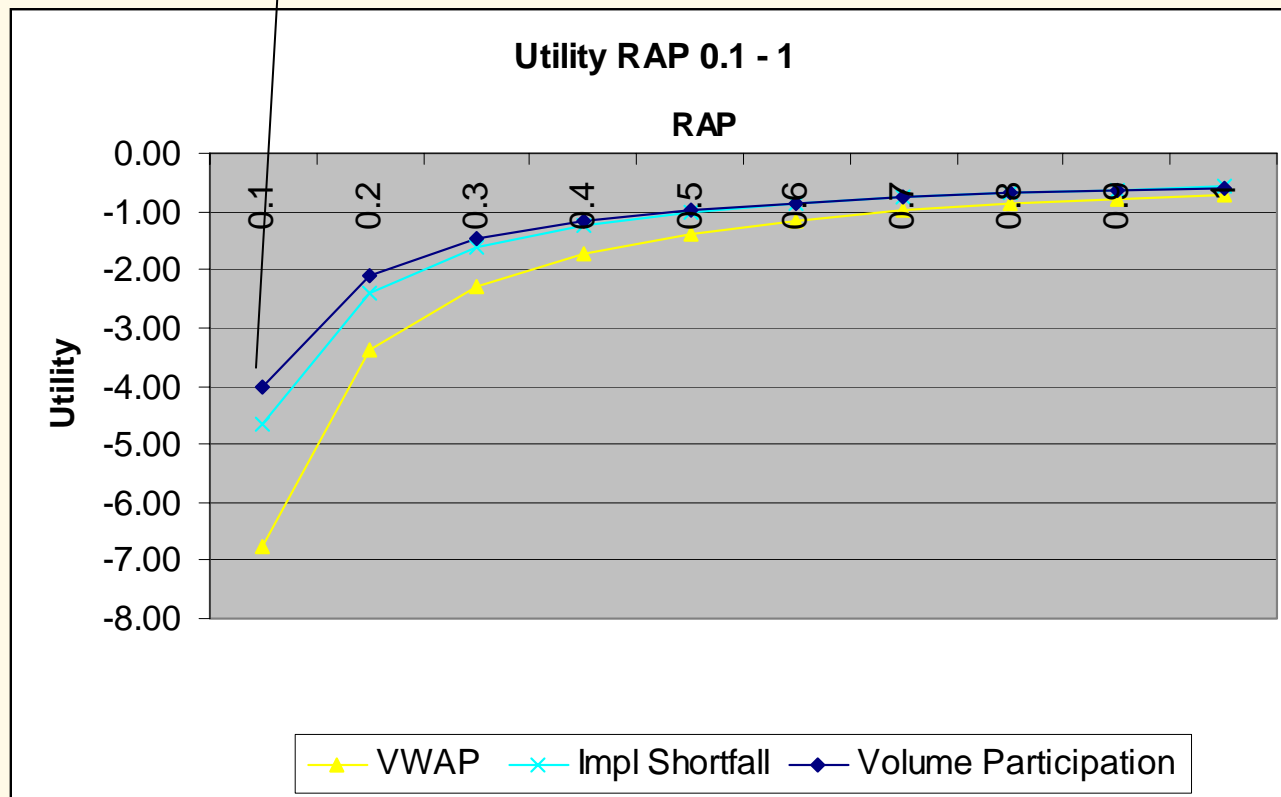
- Because institutional trade executions lose money on average, the utility will always be negative
- We are trying to minimize disutility

¹ Expressed in decimal format

Impl Shortfall (Medium Risk) starts to have more utility than VWAP (High Risk) below RAP of 3

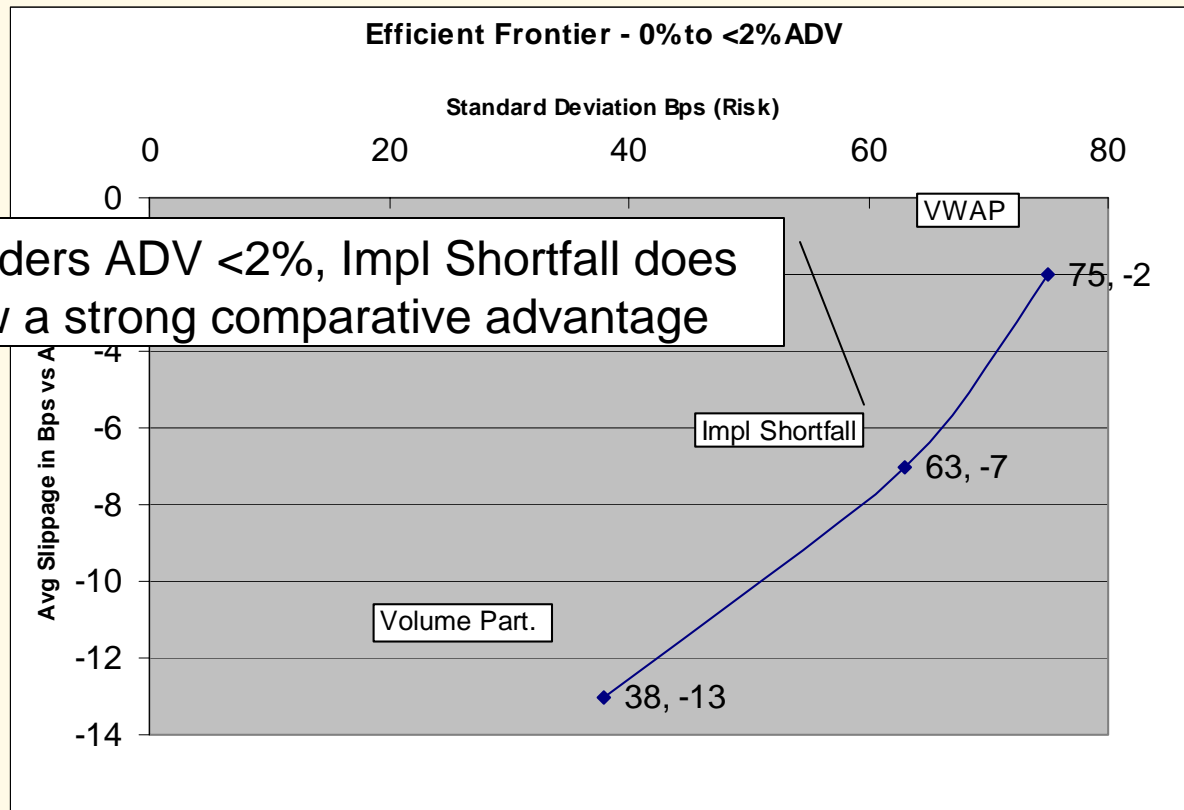


Volume Participation, as typically utilized* (Low Risk) is the strategy with the most utility only below RAP of 0.7 ! Is anyone this risk averse?



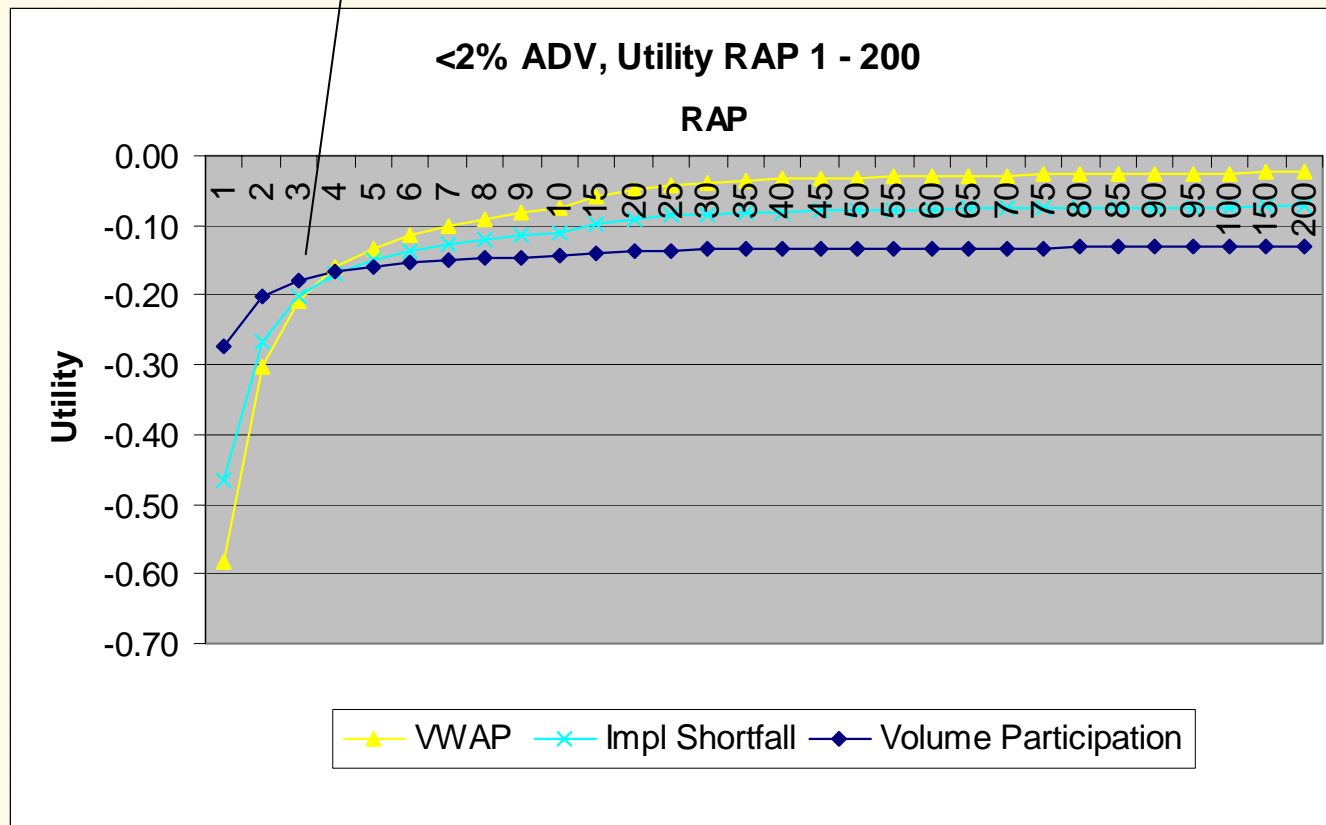
* Avg Volume Participation Rate is 26%

<u>Strategy</u>	<u># Orders</u>	<u>Average % Avg Daily Volume</u>
VWAP	14,115	0.4%
Impl. Shortfall	2,977	0.6%
Volume Part.	1,283	0.7%

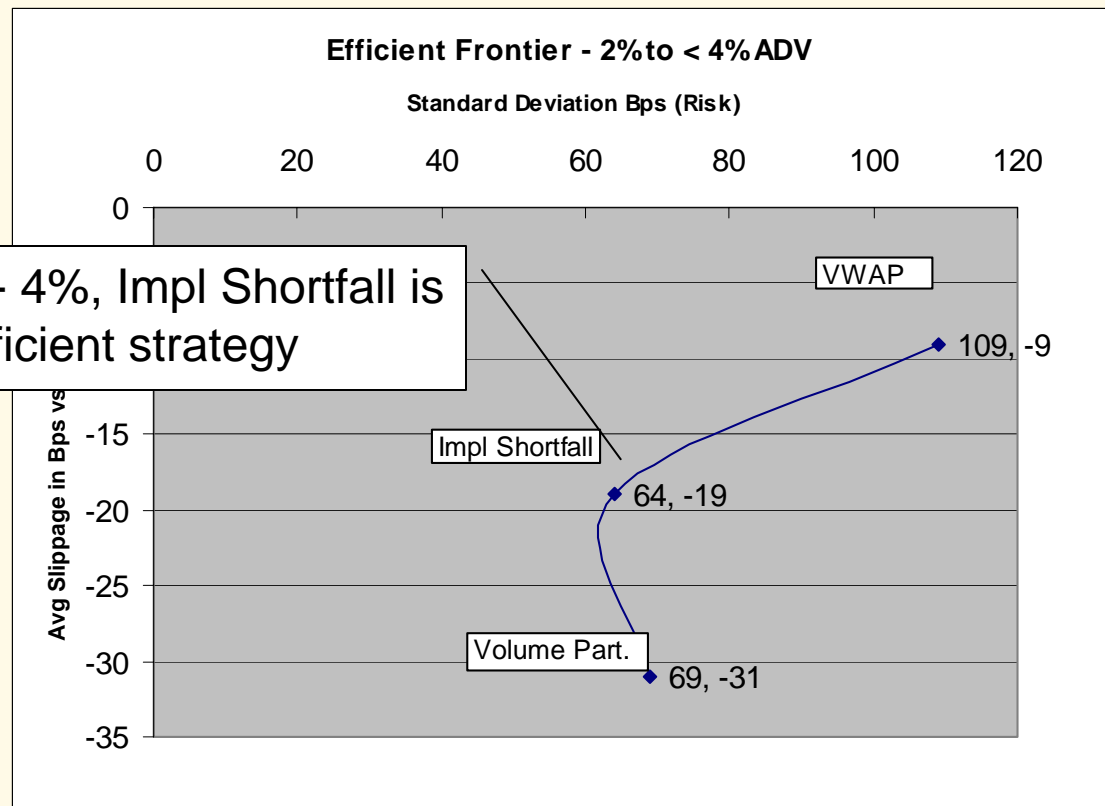


Among orders ADV <2%, Impl Shortfall does not show a strong comparative advantage

For ADV < 2%, Volume Participation becomes strategy with most utility at RAP 3 and below b/c of lower potential to 'do damage' with smaller orders

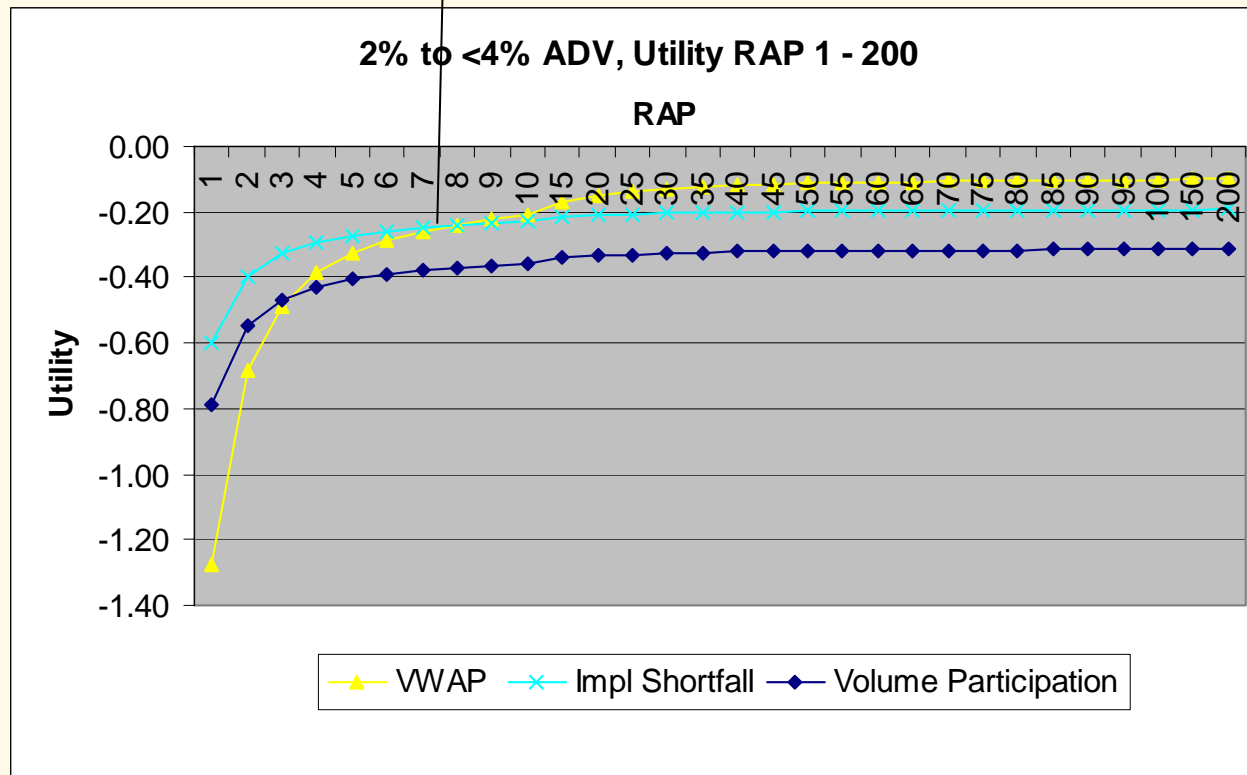


<u>Strategy</u>	<u># Orders</u>	<u>Average % Avg Daily Volume</u>
VWAP	914	2.8%
Impl. Shortfall	736	2.8%
Volume Part.	253	2.8%



Among ADVs 2% - 4%, Impl Shortfall is the most efficient strategy

VWAP and Impl Shortfall intersect b/w RAP 7-8,
Volume Participation has lowest utility through
the entire RAP spectrum down to 1



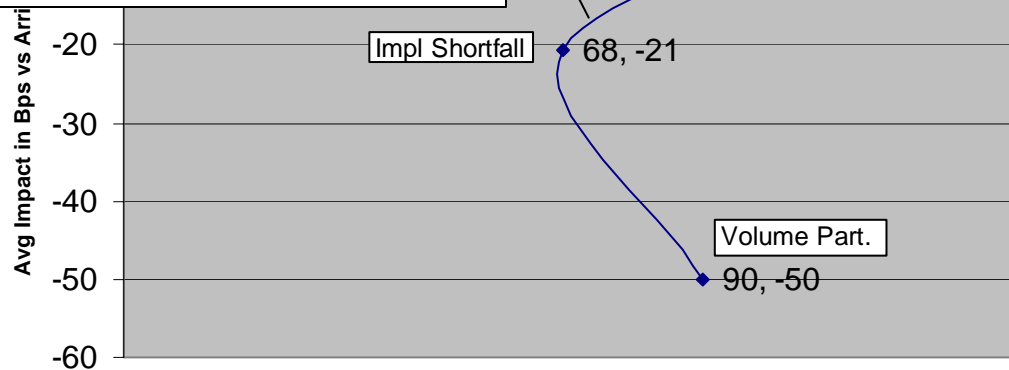
<u>Strategy</u>	<u># Orders</u>	<u>Average % Avg Daily Volume</u>
VWAP	375	4.9%
Impl. Shortfall	316	4.9%
Volume Part.	93	4.9%

Efficient Frontier - 4% to < 6% ADV

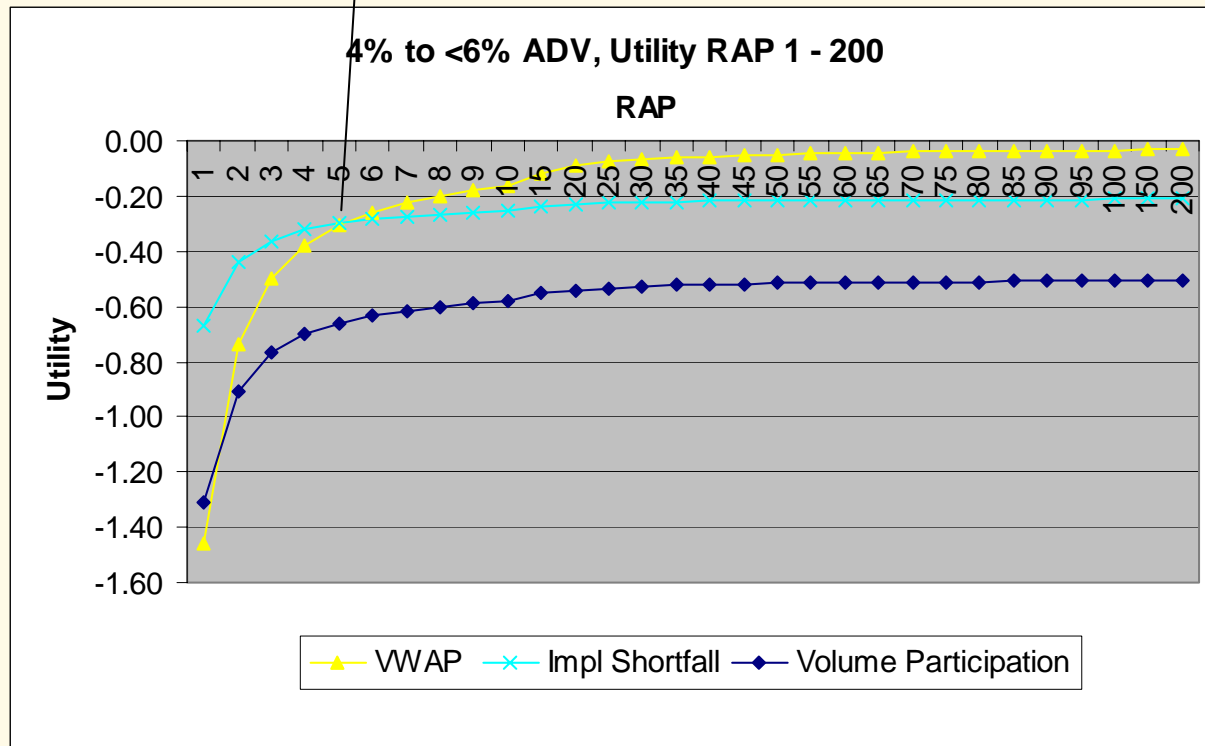
Standard Deviation Bps (Risk)

0 20 40 60 80 100 120 140

Among ADVs 4% - 6%, Impl Shortfall is the most efficient strategy



VWAP and Impl Shortfall intersect around RAP 5,
Volume Participation intersects with VWAP at RAP 1



Summary

- A lot of trade executions performed at implied RAPs <10 , and even at RAP <1
- Most balanced institutional portfolios have RAPs of 50-75 (rule of thumb: desired tracking error * 6)

Why are many institutional trades this risk averse?

- Short-term alpha
- Workflow reasons (get done and move on)
- Psychology of trader-PM relationship

Short-term alpha test

- Assume 50 RAP
- VWAP strategy has most utility
- Spread b/w VWAP and Volume Participation is 19bps (-3bps VWAP, -22 Volume Participation)
- 19bps intraday alpha decay * 252 trading days = 47.88%
- Do you have 47.88% annualized alpha?

Conclusions

- The reasons for low implied RAPs are structural and behavioral
- Rigorous analysis of trading performance can shed light on implied RAPs of executions
- It can help align the RAPs of your trading with those of your portfolio
- Talk to your broker (e.g. Instinet) to help you do this

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