Market Making and Liquidity Provision in Modern Markets

Phil Mackintosh
What am I going to talk about?

Why are “Modern Markets” Important?
Trading is now physics…at the speed of light…
Automation has benefitted all sorts of investors

Source: KCG Estimates
Automation has benefitted all sorts of investors

Source: KCG Estimates
Most HFT is good...

Source: Tabb
What am I going to talk about?

Market Making and Liquidity Provision
Liquidity Provision 101: The buy-side perspective

Market Maker Profit: 1 cents x 300 = $3.00 (before costs)

Buyer for 100 -> Seller for 100

Buyer for 100 -> Seller for 100

Buyer for 100 -> Seller for 100

Market Maker Position: FLAT
Liquidity Provision 101: The market makers perspective

Market Maker Profit:
-5 cents x 500 = $25.00
-4 cents x 500 = $20.00
-3 cents x 500 = $15.00
-2 cents x 500 = $10.00
Loss $70.00 (before costs)

Market Maker Position:
+2,000 shares

Price Momentum: Down

Bid Offer
This is why queue priority is so important…

Source: KCG
From the perspective of the market maker
Spreads seem to “rationally widen” using Black Scholes

Source: KCG
What am I going to talk about?

Why is Speed so Important?
Shouldn’t market makers be obligated to provide liquidity?
Shouldn’t market makers be obligated to provide liquidity?

Exponentially difficult for market makers…

• Every stock has…Puts and calls
• Each put and call has…OTM, ATM, ITM strikes
• Each strike has… different terms to maturity
• Each contract needs a bid & offer
• Currently are 12 exchanges (+1 more shortly)

For example, IBM has over 250 options…requiring 6000 quotes
Is There a (Message) Traffic Problem?

Source: FINRA
What am I going to talk about?

What do Academics Say?
Liquidity Provision 101: The academics perspective

Flow Toxicity and Liquidity in a High Frequency World

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Abstract:
Order flow is toxic when it adversely selects market makers, who may be unaware they are providing liquidity at a loss. We present a new procedure to estimate flow toxicity based on volume imbalance and trade intensity (the VPIN toxicity...
We find that:

○ HFT react quickly to big trades can be seen as a way of playing defense against informed investors
Academic results…

Who supplies liquidity, how and when?

Argue that in fact HFT proprietary traders remain active during a crisis because:

- they are able to keep adverse costs under control.
- proprietary traders’ conduct risky arbitrage.
- prop traders (fast and slow) are more profitable because they are able to take contrarian positions
- Thus, by absorbing selling or buying pressure, they tend to stabilize the market.”
We find that

- HFTs provide liquidity the order in the first hour
- But sometimes turn around…in the case of multi-hour executions.
- Institutional trading cost is 39% lower when HFTs provide liquidity
- But are 64% higher when they go with it.
What am I going to talk about?

Do Investors Benefit from Speed?
ETF & Futures investors benefit from High Frequency markets
ETF & Futures investors benefit from High Frequency markets
ETF & Futures investors benefit from competitive markets

Source: KCG
Speed has always been an unfair advantage

<table>
<thead>
<tr>
<th>Year</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>1676</td>
<td>Ole Rømer first demonstrated that light travels at a finite speed</td>
</tr>
<tr>
<td>1832</td>
<td>Electronic telegraph was invented</td>
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<tr>
<td>1903</td>
<td>NYSE Floor Opened</td>
</tr>
<tr>
<td>2007</td>
<td>Reg NMS Protected Quote</td>
</tr>
</tbody>
</table>
But it’s just physics…

This is what University of Leicester physics students suggest hyperspace travel would really look like.

the Doppler Effect, which affects the wavelength of radiation from moving sources, would cause stars’ light to shift out of the visible spectrum and into the X-ray range.
What am I going to talk about?

What Does This Mean for Naturals?
Speed is important for long term traders too

Source: KCG
Routing is a trade-off

Seller for 1000

Dark Pool 1

Buyer for 500

Dark Pool 2

$20.00  .01  .02  .03  .04  .05  .06  .07  .08  .09  .10  .11  $20.12

Bid Offer

$20.01  .02  .03  .04  .05  .06  .07  .08  .09  .10  .11  $20.12

$20.01  .02  .03  .04  .05  .06  .07  .08  .09  .10  .11  $20.12

$20.01  .02  .03  .04  .05  .06  .07  .08  .09  .10  .11  $20.12

$20.01  .02  .03  .04  .05  .06  .07  .08  .09  .10  .11  $20.12

$20.01  .02  .03  .04  .05  .06  .07  .08  .09  .10  .11  $20.12
Lit vs Dark is a trade-off

Source: KCG
Lit vs dark is a trade-off

- Displayed: 51%
- ISO/IOC/Market: 20%
- Non Displayed: 29%

Source: KCG
4 Key Points: Understand the market Makers perspective

1. Liquidity providers want to make markets
2. But to stay in business they need to avoid big losses
3. Sometimes that means...avoiding you
4. Unless you can trade in a way they can stay hedged
Thank you.

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