Electronic trading & the growth of automated trading strategies

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Euro Government Fixed Income Cash: Electronic Trading

Euro Government Client e-Market
Annual Notional Volume (€ Billions)

- 1% vs 2014
First time down

2015

Source: Tradeweb, Bloomberg, BondVision
## European Electronic Fixed Income: Current Market Structure

<table>
<thead>
<tr>
<th>European e-Markets</th>
<th>Dealer-to-Client</th>
<th>Dealer-to-Dealer</th>
<th>Retail</th>
</tr>
</thead>
<tbody>
<tr>
<td>Matching</td>
<td>RFQs</td>
<td>Central Limit Order Book (CLOB) price-driven</td>
<td>Central Limit Order Book (CLOB)</td>
</tr>
<tr>
<td>No. of instruments</td>
<td>Thousands of bonds</td>
<td>Limited bonds</td>
<td>Hundreds</td>
</tr>
<tr>
<td>Types of trades</td>
<td>Outright, non-standard, multi-leg</td>
<td>Outright, standard, single leg</td>
<td>Outright, standard, single leg</td>
</tr>
<tr>
<td>Pricing</td>
<td>Indicative prices streamed</td>
<td>Firm prices streamed</td>
<td>Firm</td>
</tr>
<tr>
<td>Size</td>
<td>Larger Size (largest go to voice)</td>
<td>Reasonable size</td>
<td>Tiny</td>
</tr>
<tr>
<td>Anonymity</td>
<td>Name give-up pre &amp; post-trade</td>
<td>Anonymous pre- and mostly post-trade</td>
<td>Anonymous pre- and post-trade</td>
</tr>
<tr>
<td>Market places</td>
<td>Multi-dealer platforms dominate (very few single dealer)</td>
<td></td>
<td>Stock exchanges, EuroMOT, Euronext</td>
</tr>
<tr>
<td>Examples</td>
<td>Tradeweb, Bloomberg, BondVision</td>
<td>Brokertec, MTS Markets</td>
<td></td>
</tr>
<tr>
<td><strong>Client Side</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Participant Types</td>
<td>Institutional clients mainly asset managers</td>
<td>Dealers only (except 1 hedge fund on-SEF)</td>
<td>Dealers only</td>
</tr>
<tr>
<td>Trade match automation</td>
<td>High touch, all manual</td>
<td>Some auto-response</td>
<td>Low touch, mostly automated</td>
</tr>
<tr>
<td><strong>Dealer Side</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Degree of Automation</td>
<td>Automation focused on increased efficiency:</td>
<td>Automation focused on inquiry handling:</td>
<td>Automation focused on Speed:</td>
</tr>
<tr>
<td></td>
<td>- Order Management Systems</td>
<td>- Certainty in mids</td>
<td>- Data feeds</td>
</tr>
<tr>
<td></td>
<td>- Trading tools e.g. bid lists</td>
<td>- Spread &amp; tier management</td>
<td>- Trading APIs</td>
</tr>
<tr>
<td></td>
<td>- Post-trade processing of tickets</td>
<td>- Auto-responding</td>
<td>- Fibre optic networks</td>
</tr>
<tr>
<td></td>
<td>*Most new e-initiatives aim to ease finding liquidity/inventory</td>
<td>- Auto-hedging</td>
<td>- Co-location</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Others e.g. risk, credit</td>
<td></td>
</tr>
<tr>
<td>Speed</td>
<td>Low Speed</td>
<td>Moderate Speed</td>
<td>High Speed</td>
</tr>
<tr>
<td>&quot;Openness&quot; of Access</td>
<td>Limited</td>
<td>Limited</td>
<td>Limited</td>
</tr>
</tbody>
</table>
How does European cash govt e-market compare?

Openness of Access

<table>
<thead>
<tr>
<th>Tradeweb 2015</th>
<th># Securities Traded</th>
<th># Securities 25% Volume</th>
<th># Securities 50% Volume</th>
</tr>
</thead>
<tbody>
<tr>
<td>TRSY</td>
<td>713</td>
<td>15</td>
<td>53</td>
</tr>
<tr>
<td>EUGV</td>
<td>1274</td>
<td>32</td>
<td>110</td>
</tr>
</tbody>
</table>

Source: Tradeweb

Most open & most automated

Most open & most automated

Bond futures markets
Truly open access e.g. Eurex, CBOT

UST broker markets
- Dealers
- High frequency firms

High touch, all manual
Milliseconds don’t matter....

High & low touch
Milliseconds sometimes matter....

High speed & low/no touch
Milliseconds always matter....

EG cash broker markets
Dealers only

EG cash D2C markets: Dealers
Dealers only

EG cash D2C markets: Clients
Mainly asset managers

Broker mkts 2015
# Securities Traded | # Securities 25% Volume | # Securities 50% Volume
BTEC TRSY 347 | 5*         | 15*         |
BTEC EUGV 643 | 31         | 99          |
MTS EUGV 726 | 37         | 95          |

Source: MTS, Brokertec

* 30% on 5yr; and 54% on 5yr & 10yr
Automated Trading Strategies - Good or bad?

What are automated trading strategies?

Rewards of an open access CLOB

- Greater efficiency through increased automation
  - Fewer operational errors through straight through processing (STP)
  - Greater competition through open nature
  - Lower bid-offer spreads therefore lower cost of trading
- Increased no. of new players, e.g. high frequency traders, who can fill liquidity vacuum
- Lower cost of balance sheet through being able to offload risk easily
- Better & more accurate pricing encouraged because corrections happen very quickly

Risks of an open access CLOB

- Increased market vulnerability due to additional risks introduced into the system (very fast trading, hard to monitor) e.g.
  - "Signal risk" where a trader inadvertently advertises a significant risk move
    - Leads to "Flash crash" risk where selling/buying triggers even more selling/buying
  - "Follow best" strategies
- Machines not error-free which could further flood the system with other order strategies
- Encourages market manipulation strategies (spoofing, layering, wash trades)
- Increased risk of front running
- Risk of market liquidity reducing exacerbated by real flow being executed off venue

Automated strategies follow a specific logic or algorithm:
- Hedging: - Client/real flows
- Speculating/arbitrage: - Relative value: mispricing/arbitrage opportunities
  - Technology: speed-based advantages e.g. latency arbitrage

Automated trading strategies are prevalent on: central limit order books which have open access and few concentrated points of liquidity

What are automated trading strategies?

- Hedging: - Client/real flows
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More liquidity?
- e.g. Bund futures market

More volatility?
- e.g. UST Flash crash: 15th Oct’14
Automated trading strategies coming to European cash markets?

**US cash market**

- Automation in UST broker market - with an open access CLOB - has evolved faster and more competitively compared to European cash model
- Open access with few concentrated points of liquidity is synonymous with high frequency trading firms. These firms actively deploy automated trading strategies

**TabbForum Dec15:**

“Treasuries are quickly transitioning away from a dealer-driven, “cherry-picker” market to an “all-comers” market. That is a market where all participants have to be willing to essentially take on anyone, anytime, anywhere – much like a champion boxer willing to take on “all-comers”. Clearly, this creates a fairer, more competitive market that drives down trading costs for all investors.

Yet, some critics claim that our treasury markets, like our equity markets, are in need of immediate reform. They point to characteristics such as constant quote changes and smaller transaction sizes to support their case.”

**Is this relevant in European cash market?**

- **Yes...**
  - Bond futures market: is already operating as a high speed, open access CLOB
  - Cash client markets: Possible that inventory shortage pushes market to CLOB?
  - Cash broker markets: One IDB introducing high frequency traders to the platform
    - Current IDB business model is being challenged: reduced dealer inventories has decreased profitability
    - And they are facing demand from high frequency firms
    - So evolving to be open access exchanges...

**Viewpoint: high frequency firm**

“Only unfair & discriminatory markets have the characteristics of large size & slow moving quotes” says Quantlab’s Cameron Smith (TabbForum Dec15)
Summary: should regulation seek to curb their activity?

Automated trading strategies are not solely responsible for flash crashes & high volatility e.g. regs, QE, market structure

BUT the fact is that **automated trading with open access** is not going away….

So can we mitigate risks of high frequency trading to ensure market remains robust & firms participate with confidence?

1. **Best practices controls**
   - White paper issued by TMPG* on 9th April 2015 concluded:
     “Automated trading has the potential to increase short-term volatility in financial markets by transmitting idiosyncratic shocks from one market to another”
     - Recommendations centre around reducing systemic risk e.g. more controls, testing, clearing
   - MiFID2 will introduce similar controls however look more prescriptive and over-burdensome

2. **Technology controls: Platforms taking more responsibility for monitoring**
   - MTS is now monitoring for specific spoofing strategies
   - ICAP looking at “circuit breakers” to halt UST trading after large price moves (like in equities)
   - Limiting order-to-trade ratios (e.g. Euronext equities has 100:1 per security per day limit)

3. **Market architecture changes**
   - **Named Post-trade** introduced? This would have self-policing effects (*anonymity has arguably given players a curtain to hide behind*)
   - Encourage more single dealer platforms with integration ability to seek best execution (like FX where innovation has been impressive)

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Discussion points

1. Is there a way to open market access without disincentivising the primary dealer model whilst simultaneously enhancing liquidity?

2. Trading concentration in only a few securities seems to be a pre-requisite to attracting “new” liquidity providers in the market. Is there a way to encourage greater concentration in fewer securities?

3. Will there ever be a central limit order book with fast trading in European cash client markets?

4. Has the lack of high frequency trading firms participating in current “exclusive” European cash markets meant that we are less vulnerable to flash crashes?

5. Which automated trading strategies are particularly unhelpful to enhancing liquidity? Can we be selective? Can we encourage smartness over speed?

6. Outside of automated trading itself, automation in European cash markets has been reasonably high BUT platform fragmentation risk is increasing. Can/Should we encourage a “re-concentration” of platforms?
Agenda item

Frank Engels and Zoeb Sachee will review the recent trends in electronic trading, including strategies impacting bond market liquidity and pricing capabilities from market makers. The analysis of the growth of automated trading strategies will try to answer the following questions:

(i) do they enhance liquidity or exacerbate volatility; and
(ii) should regulation seek to curb their activity.

Martin Scheck will complement the analysis with the recent ETF mapping study published by ICMA
Flash crash: UST example, 15th October 2014

UST Broker Market Structure

- >50% electronic volume concentrated on 6 on-the-run USTs
- High frequency firms participate directly on broker markets
- Both dealers & high frequency firms utilise algorithms & fast data feeds to stream 2-way firm prices
- High frequency trading firms account for half of the trading volume
  - Sep 15 Risk.net article* showed three Chicago-based firms, Jump Trading, Citadel Securities & Teza Technologies, accounting for 51 percent of the volume executed by the top 10 firms on BrokerTec

UST Flash Crash 15 Oct 2014

- The US Treasury published an Official Report** into events of 15th Oct 2014
- No particular conclusion; combination of:
  - New regulations: dealers’ reduced ability/willingness to make markets & warehouse risk in times of stress ➔
  - Rise of high-speed electronic trading in the U.S. Treasury market. 15% of self-trading on day (normally below 5%)
  - Heavy one-way positioning by big investors (betting rates increase). Short eurodolllar positions at a record by end-Sep ➔

On October 15, 2014 between 9:33 and 9:45, yields in U.S. Treasury Futures flash crashed. Massive trading activity in stock (most notable was that 8,169 ESA traded in 1 sec) and interest rate futures world-wide starting at 7:19:29 ET was the origin of the price move which led to a world-wide collapse in liquidity and price instability. High activity persisted for little over 2 secs and was so unusual that it eclipsed the level of activity during the 8:30 news event and the Stock Market opening. The price movement that began at 7:19:29 continued in the same direction through the 8:30 news event and the Flash Crash at 9:40. If this was a large (huge) bet, it was correct.

Source: Nanex, Citi Research
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