Advanced Trading in Futures

Opportunities and Challenges

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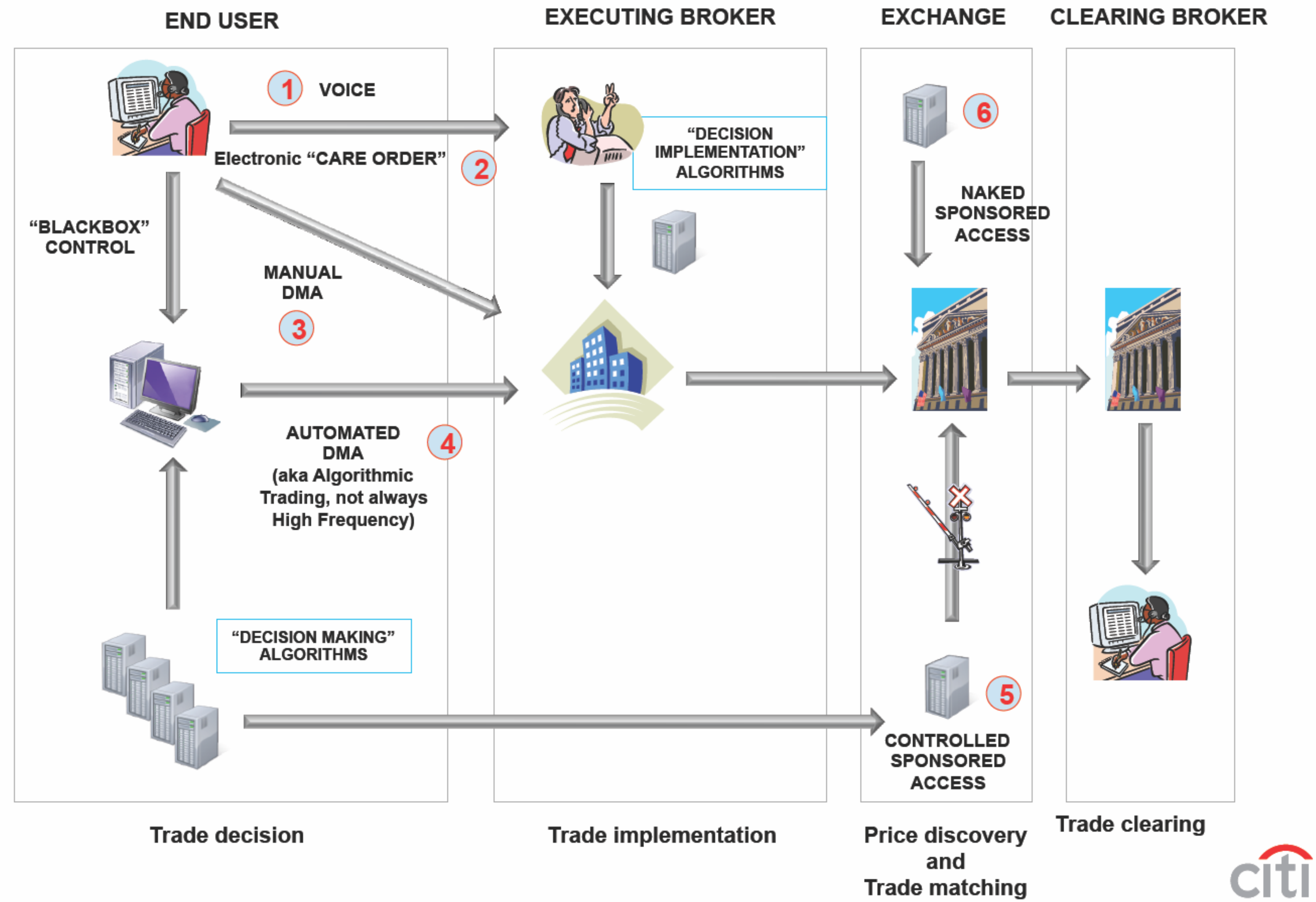
How we trade today?

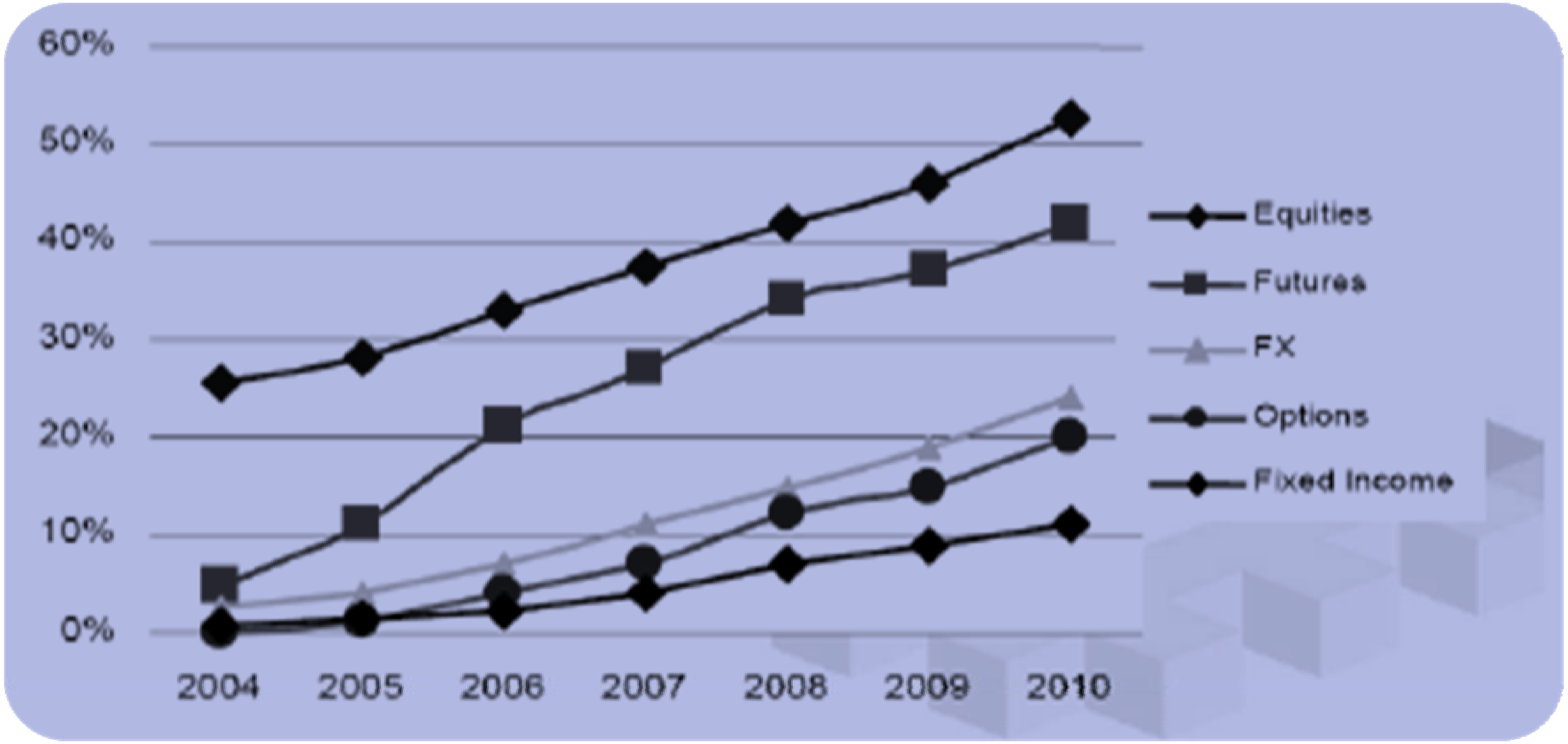


What exactly is Algorithmic Trading?

- Algorithmic Trading (AT) may be defined as electronic trading whose parameters are determined by strict adherence to a predetermined set of rules aimed at delivering specific execution outcomes.

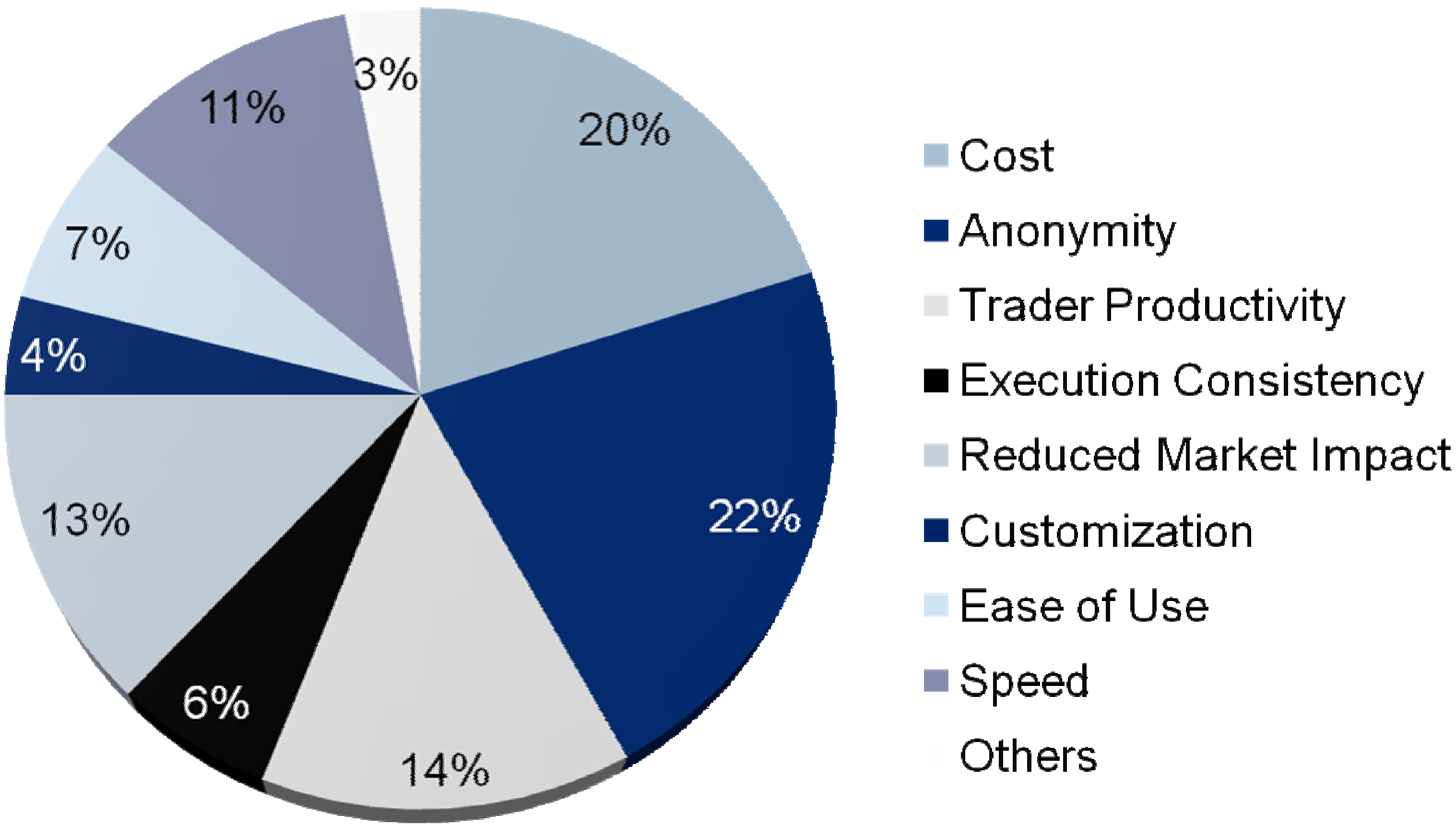
- Characteristics of Algorithmic Trading
  1. Pre-designed trading decisions
  2. Used by professional traders
  3. Observing market data in real-time
  4. Automated order submission
  5. Automated order management
  6. Without human intervention
  7. Use of direct market access

Is Algo Trading unique to Futures?



Source: Aite Group estimates

Why do traders use Algos?



Source: The TRADE Annual Algorithmic Survey

So, what is this High Frequency Trading?

- While there is no real definition - because HFT it is not about a type of activity but about the frequency and speed of it - The execution of trading strategies based on algorithms to capture opportunities that may be small or exist for a very short period of time.

- **Typical Characteristics** (but not always)
  - Very high number of orders & Rapid order cancellation
  - Proprietary trading, Profit from buying and selling (as middleman)
  - Very short holding periods
  - No significant position at end of day (flat position)
  - Extracting very low margins per trade
  - Ultra Low latency requirement, use of co-location/proximity services and individual data feeds
  - Use computerized quantitative models

All High Frequency Trading is Algorithmic BUT not all Algorithmic Trading is High-Frequency.

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HFT, Colo, Algo. Are these all the same thing?

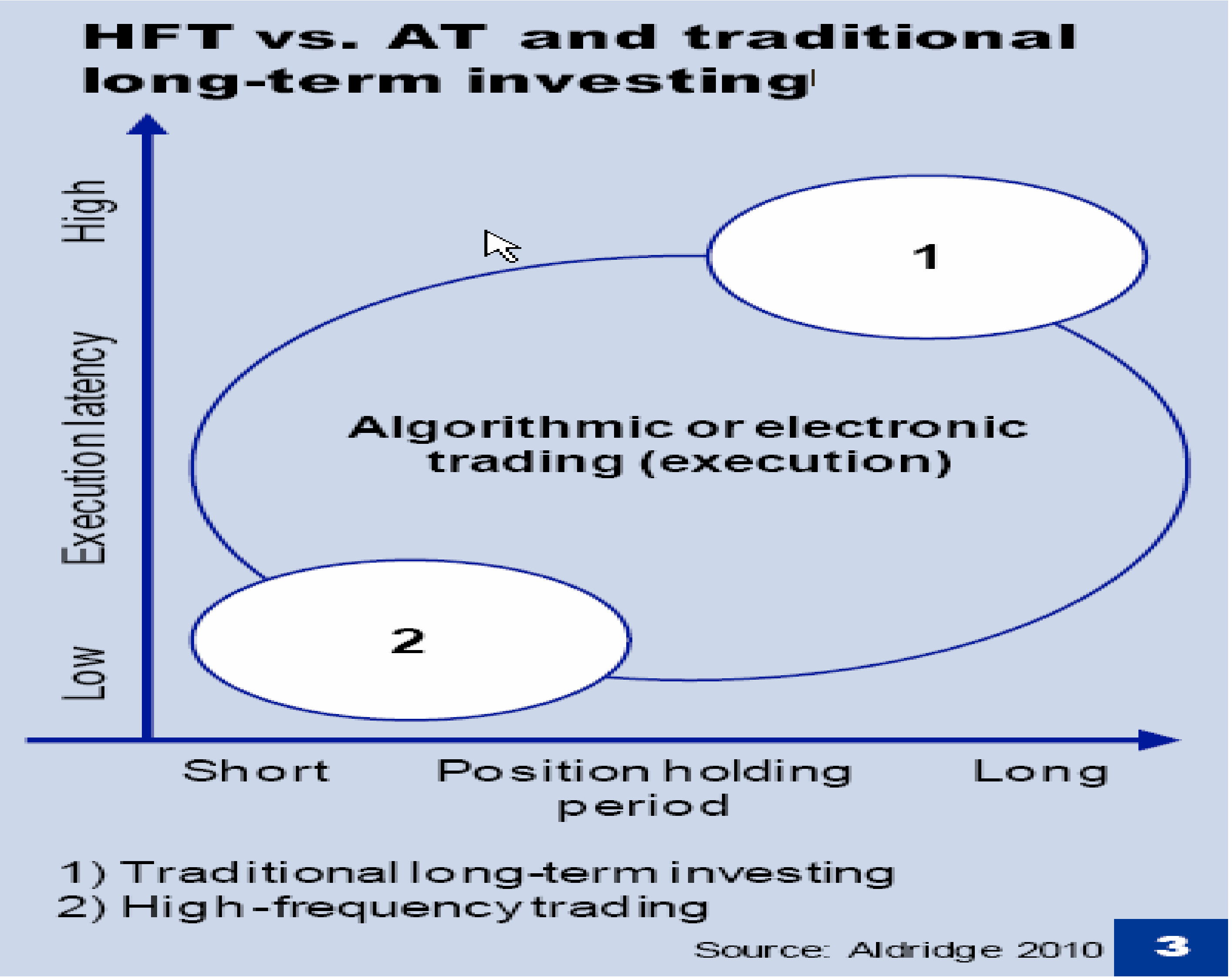
- **Algorithmic Trading (AT)** any form of trading using sophisticated ‘algorithms’ to automate all or some part of the trade cycle.

- **High-frequency Trading (HFT)** execution of computerized trading strategies is characterized by extremely short position-holding periods involving trading speeds in excess of a few milliseconds.

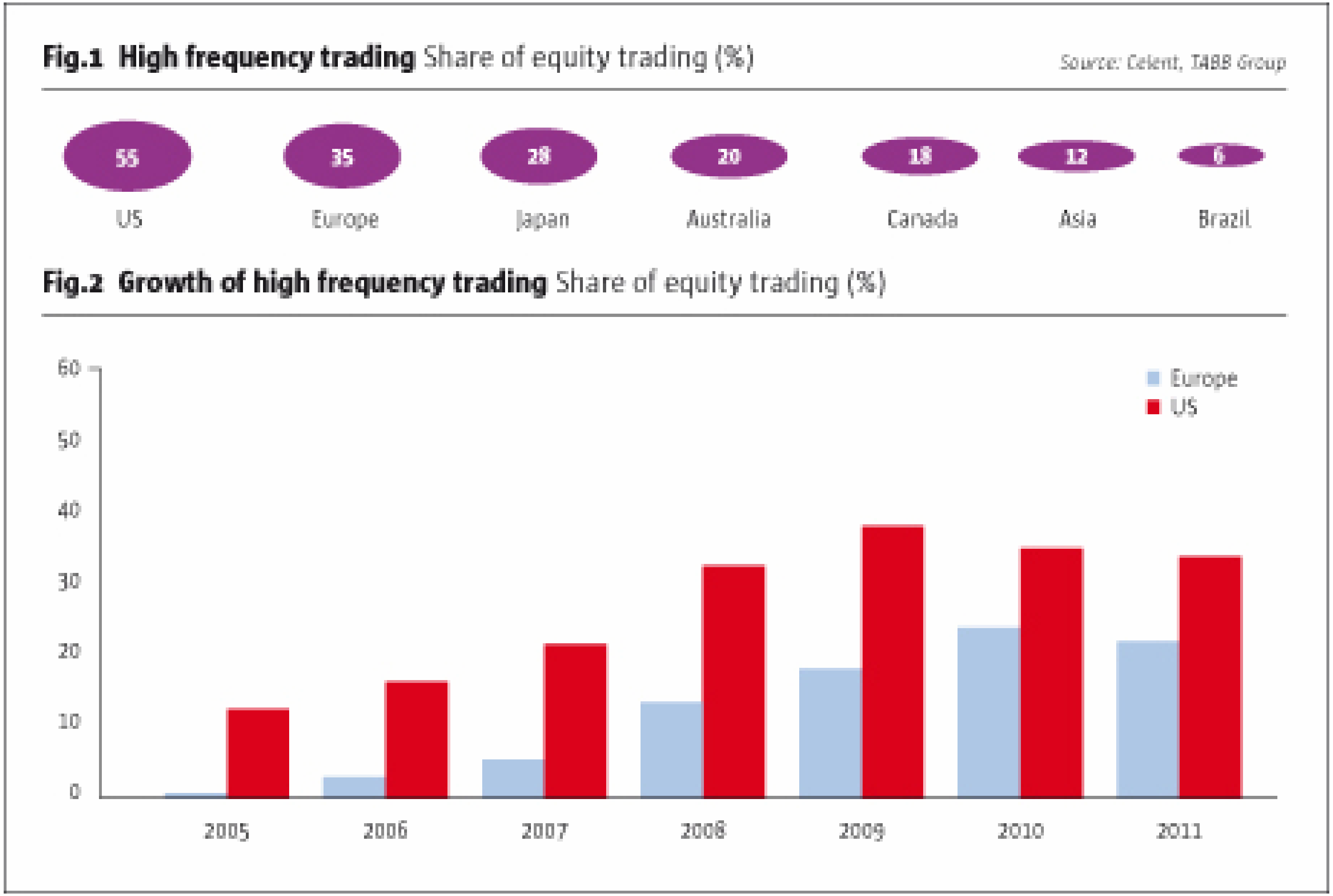
- **Ultra Low-latency Trading (CoLo)** refers to HFT execution in sub-millisecond times through co-location of servers at exchanges, direct market access, or individual data feeds offered by exchanges and others to minimize network and other types of latencies.

- **Sponsored (or Naked) Access (SA)** - buy side is enabled to route its orders to the market directly using a registered broker‘s member ID *without using the broker’s infrastructure or risk controls.*

Is High Freq Trading different from Conventional Trading?

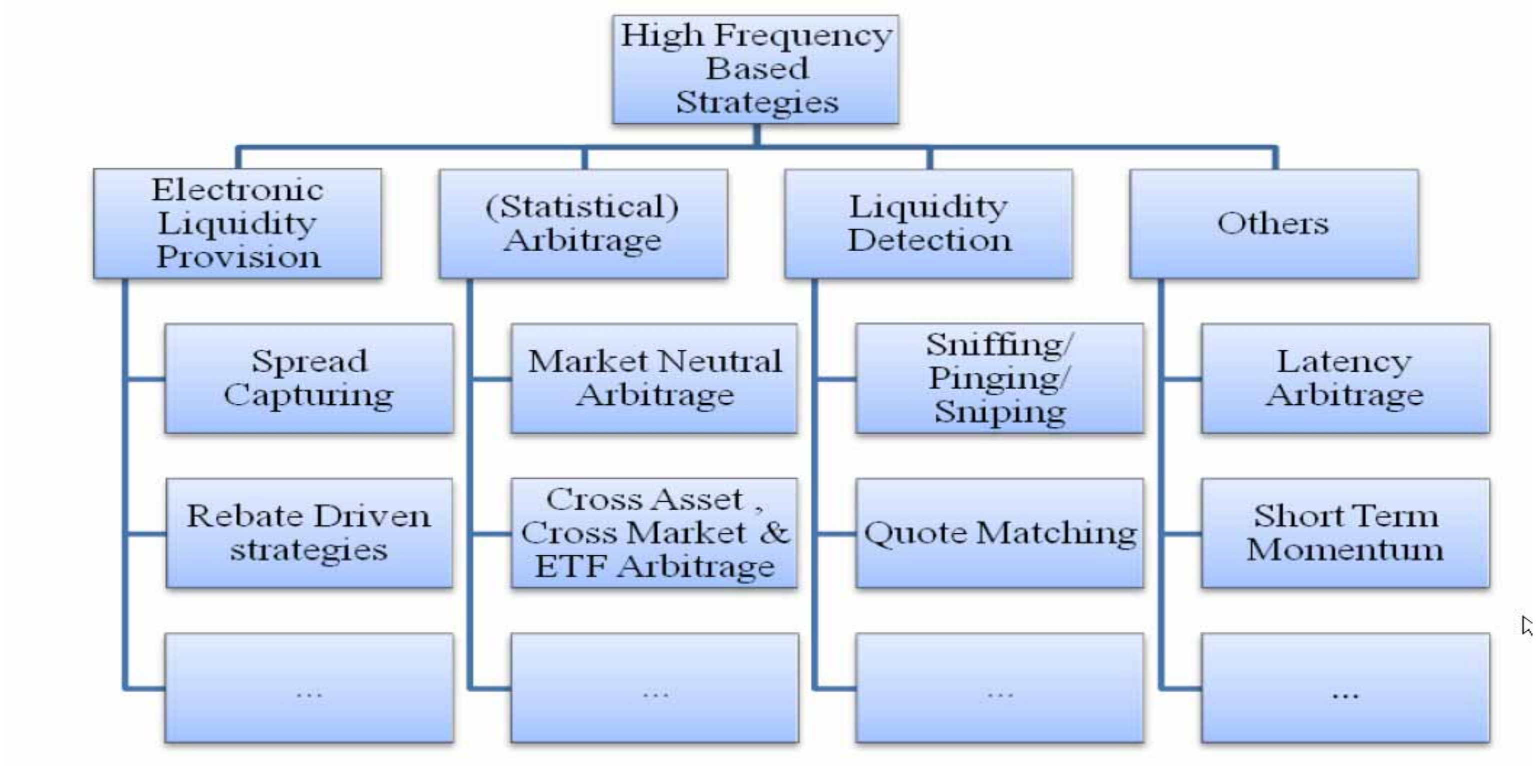


Is High Frequency Trading popular?



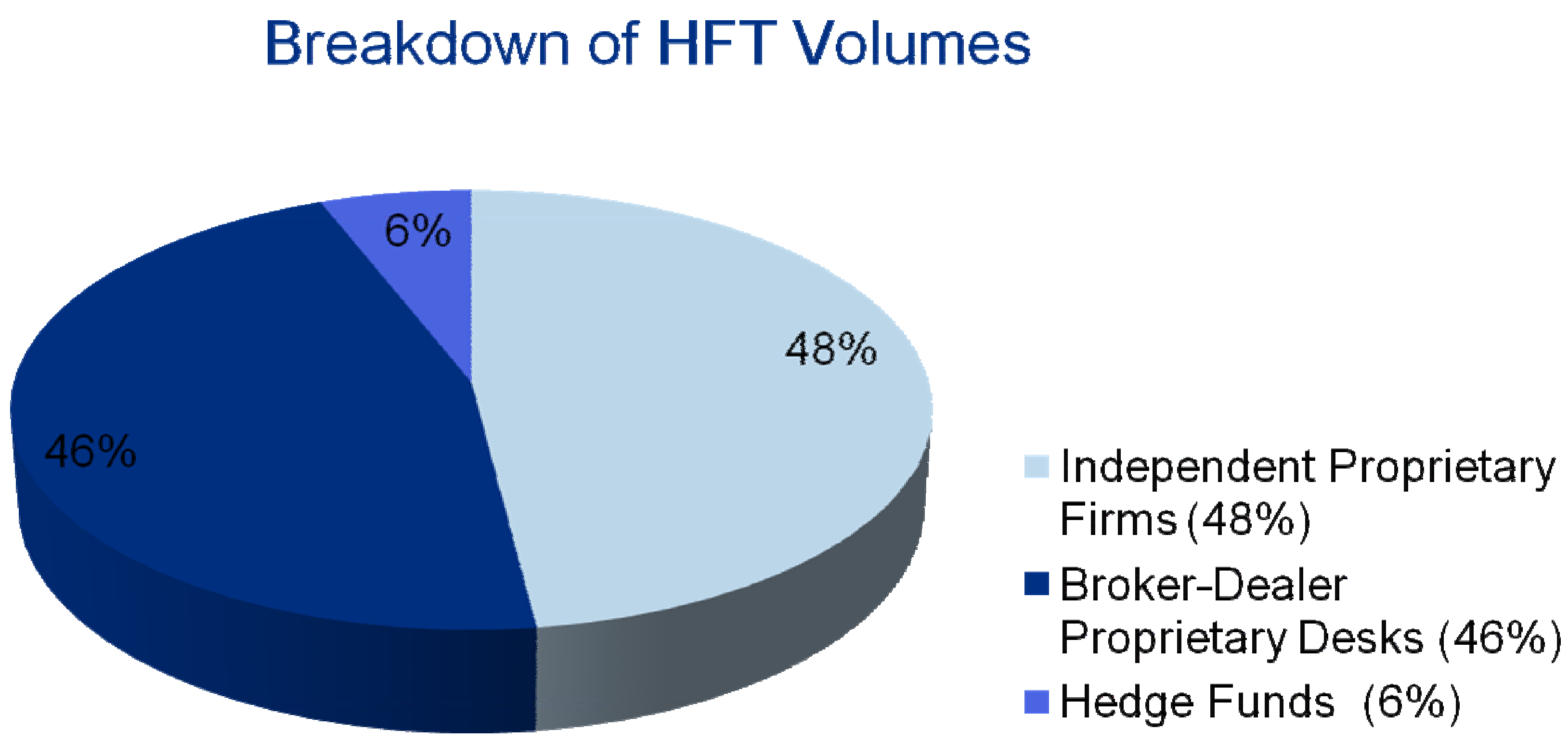
… and how are these HFT's making money?

HFT is not a strategy per se but rather a technologically more advanced method of implementing particular trading strategies. The objective of HFT strategies is to seek to benefit from market liquidity imbalances or other short-term pricing inefficiencies.



Source: HFT Paper by Peter Gomber et al

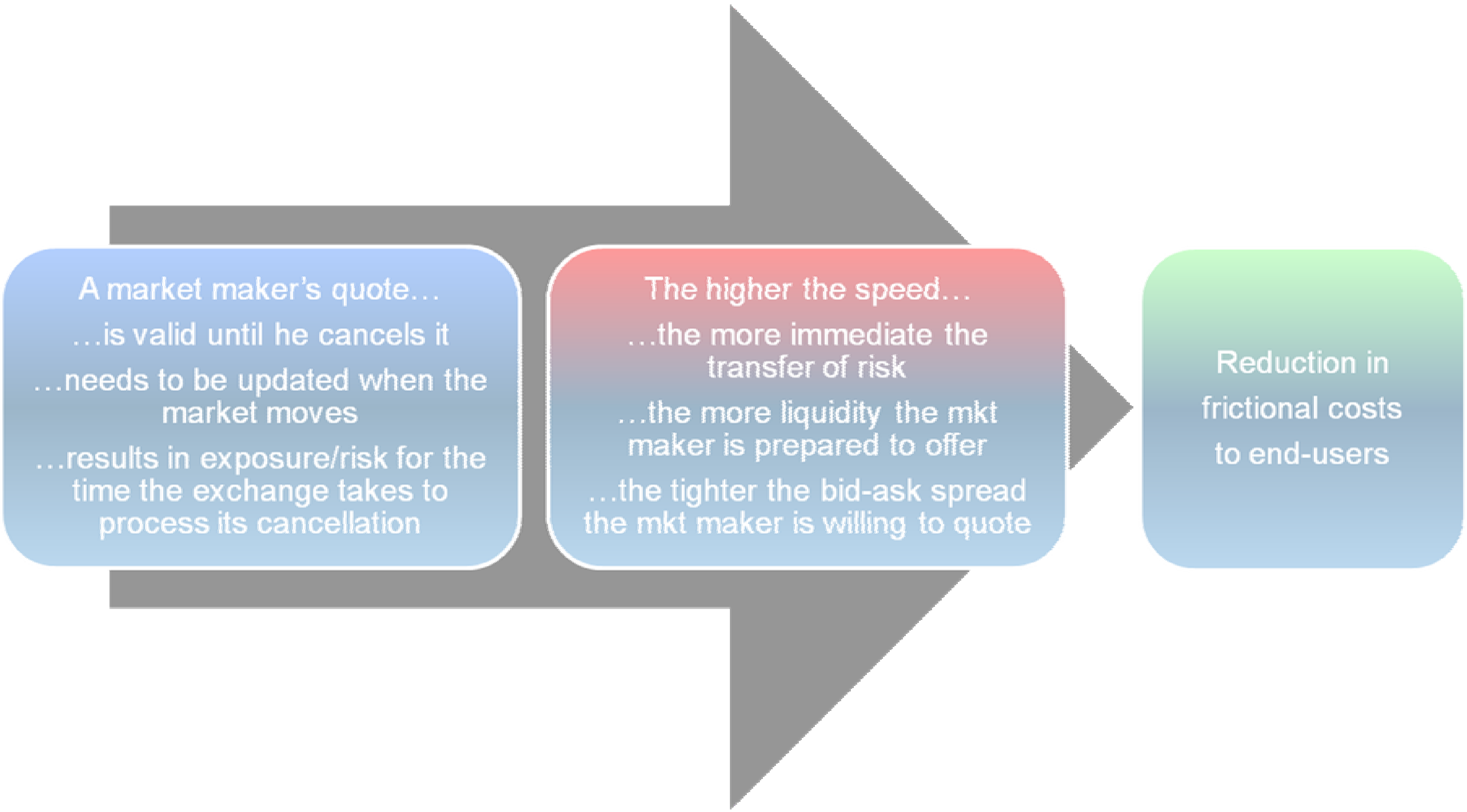
Who is trading using HFT strategies?



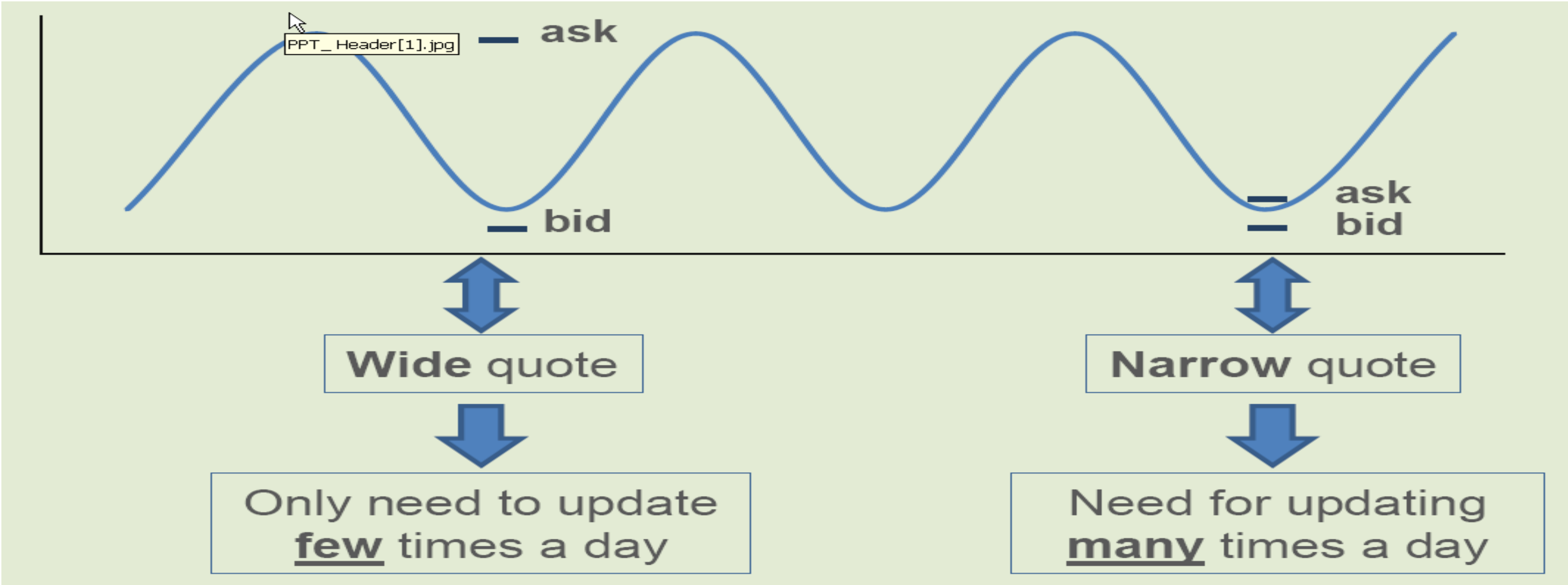
Source: TABB Group, 2010

Why is SPEED so important for these HFTs?

Speed is a risk management tool



.. And why do these HFTs generate so many Orders?

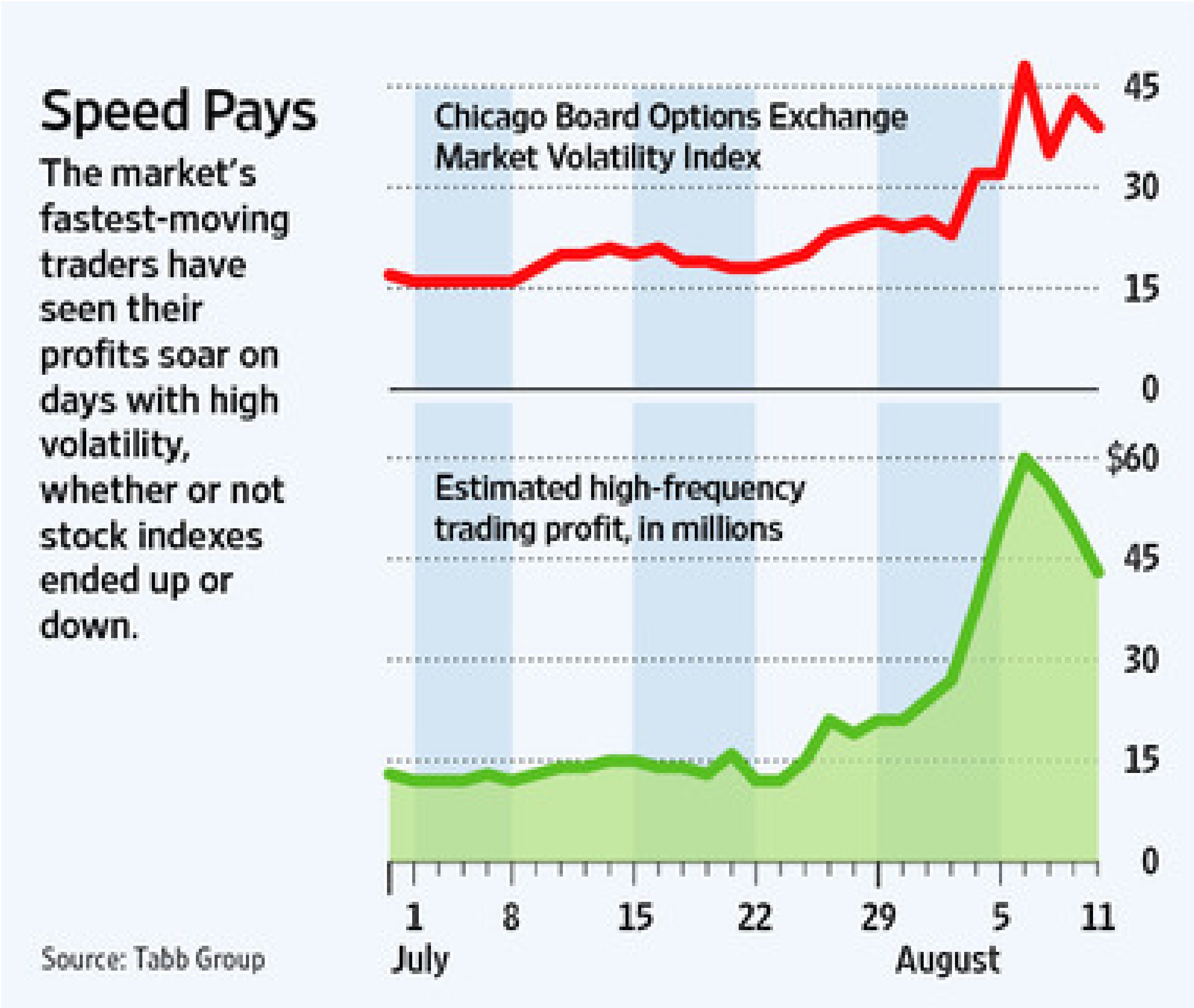


Typical Order to Trade Ratios for an Electronic Exchange

Liquid Equities Exchange	New/Startup MTF	Options Markets	ETF Markets
10 to 1	1000 to 1	1000 to 1 12,000 to 1	800 to 1

Source: FIA PTA presentation to European parliament

So do HFTs like a volatile market?



But I hear so many CONCERNS about HFT trading …

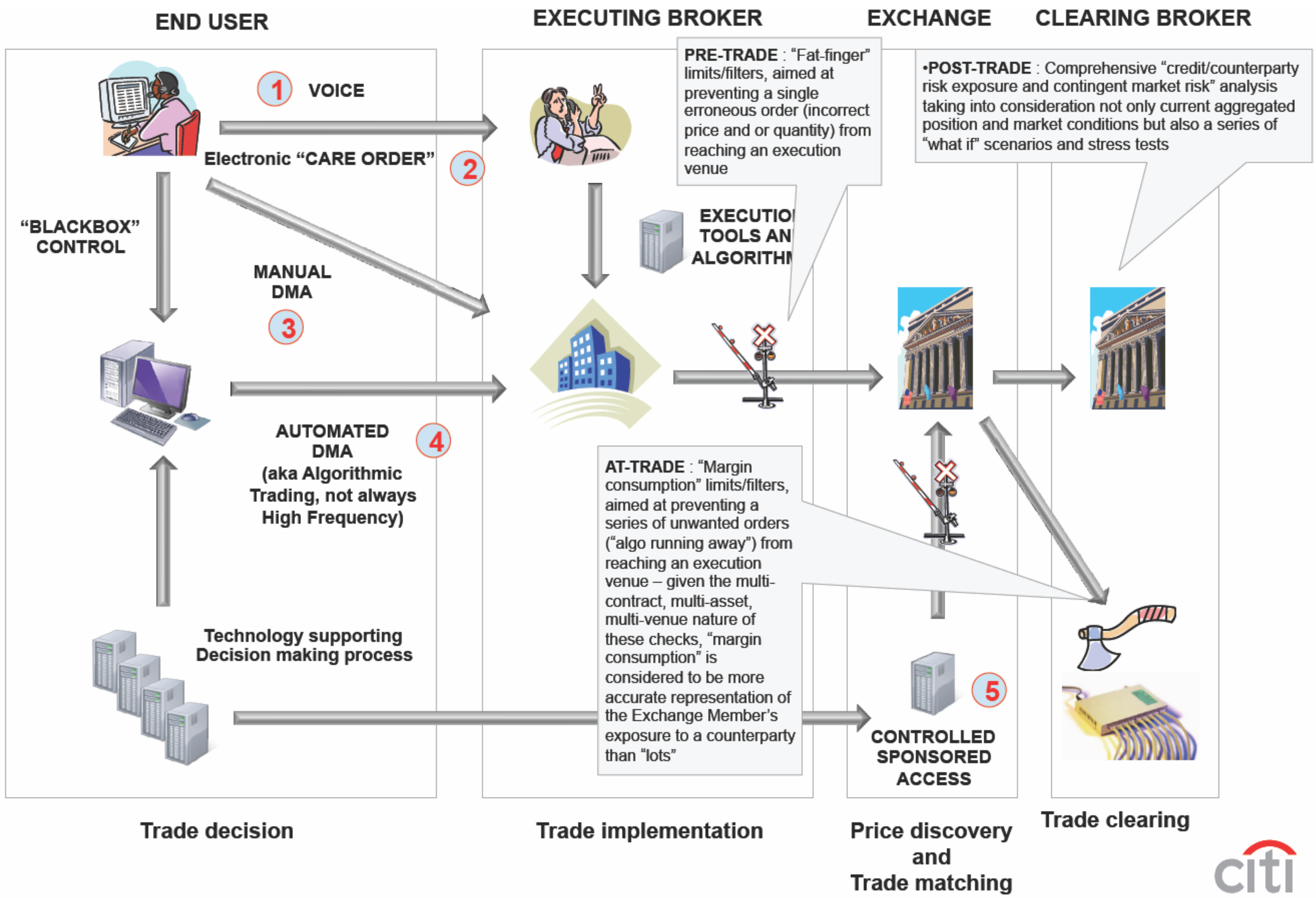
1. HFT firms stop providing liquidity in volatile markets
2. HFT firms benefit from flash orders
3. HFT increases volatility
4. HFT algorithms are going berserk
5. HFT often involves front running
6. HFT provides phantom liquidity
7. HFT firms profit from slowing down trading by quote stuffing strategies
8. HFT has an unfair competitive advantage by using sponsored access
9. HFT has an unfair competitive advantage by using co-location
10. HFT firms benefit from fee structures

Are these HFT firms really GAMING the market?

Gaming Concerns

1. ORDER DISCOVERY STRATEGIES (hidden liquidity)
2. ORDER TRIGGERING STRATEGIES (stop orders)
3. SPOOFING (lowering the best offer)
4. WASH SALES (fictitious orders)
5. FRONT RUNNING (insider info)
6. QUOTE STUFFING (denial of service)
7. STUB QUOTES (too far from market)

So how do we manage the RISK in the system?



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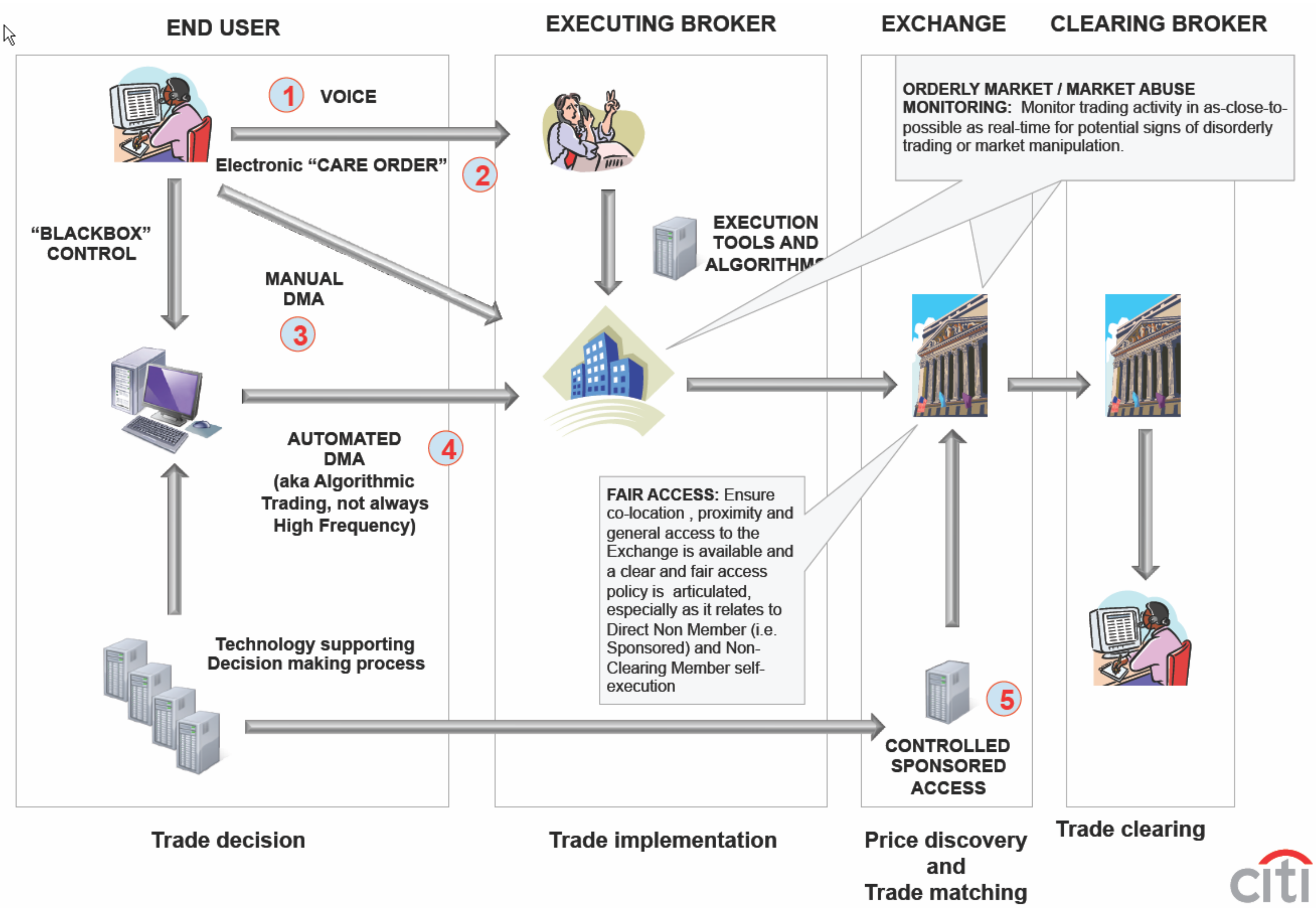
… and prevent MARKET ABUSE?



How do we regulate these HFTs …. Closing Thoughts

1. **HFT is a technical means to implement established trading strategies and a natural evolution of the securities markets rather than a completely new phenomenon.**
2. **Controls should try preserve the benefits of HFT while mitigating the risks as far as possible**
3. **Co-location and proximity services are implemented on a level playing field**
4. **Volatility safeguards are implemented by trading venues**
5. **Any assessment of HFT based strategies has to take a functional rather than an institutional approach.**
6. **The market relevance of HFT requires supervision but also transparency and open communication to assure confidence and trust in securities markets.**

Thank you …

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Citi believes that sustainability is good business practice. We work closely with our clients, peer financial institutions, NGOs and other partners to finance solutions to climate change, develop industry standards, reduce our own environmental footprint, and engage with stakeholders to advance shared learning and solutions. Highlights of Citi's unique role in promoting sustainability include: (a) releasing in 2007 a Climate Change Position Statement, the first US financial institution to do so; (b) targeting $50 billion over 10 years to address global climate change: includes significant increases in investment and financing of renewable energy, clean technology, and other carbon-emission reduction activities; (c) committing to an absolute reduction in GHG emissions of all Citi owned and leased properties around the world by 10% by 2011; (d) purchasing more than 234,000 MWh of carbon neutral power for our operations over the last three years; (e) establishing in 2008 the Carbon Principles; a framework for banks and their U.S. power clients to evaluate and address carbon risks in the financing of electric power projects; (f) producing equity research related to climate issues that helps to inform investors on risks and opportunities associated with the issue; and (g) engaging with a broad range of stakeholders on the issue of climate change to help advance understanding and solutions.

Citi works with its clients in greenhouse gas intensive industries to evaluate emerging risks from climate change and, where appropriate, to mitigate those risks.