

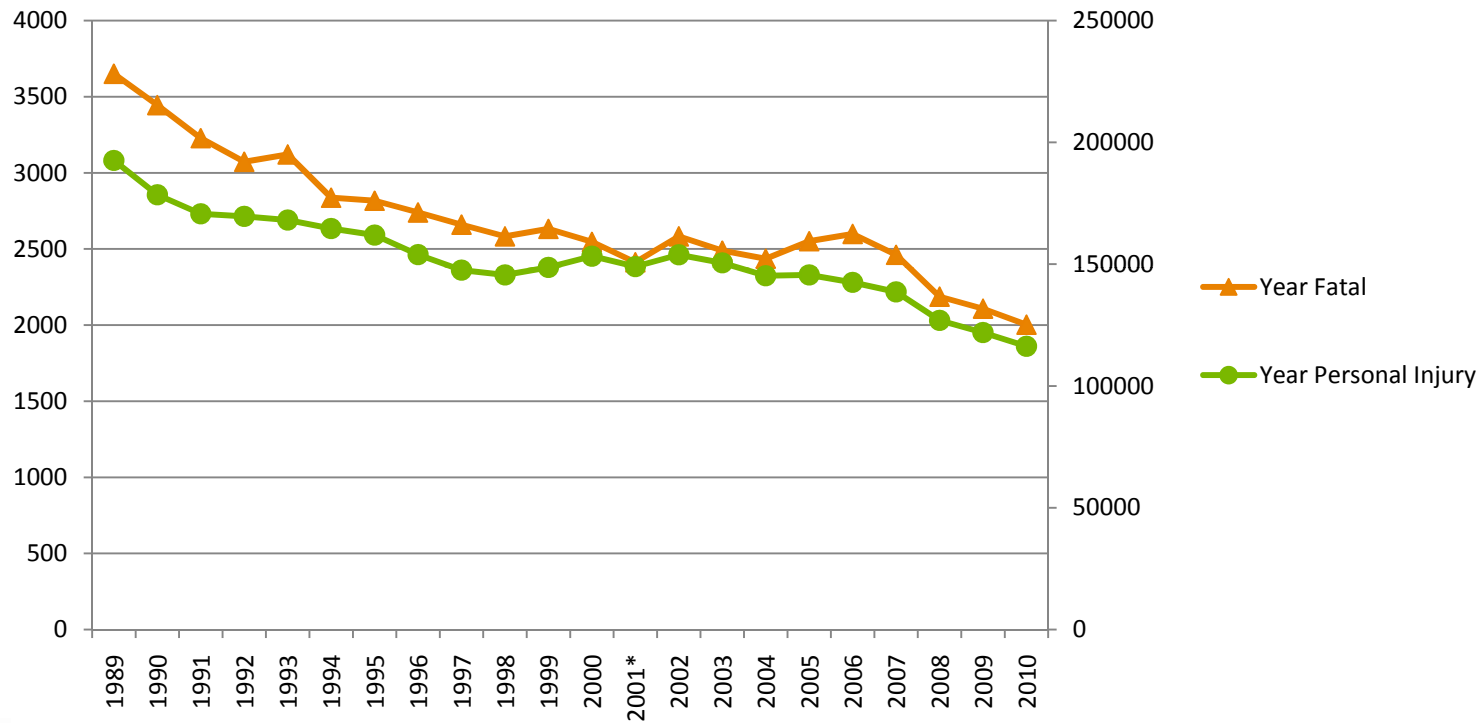
- **How Dark Pools and Fragmentation Broke Our Markets, Caused Childhood Obesity and Brought Us to the Brink of World War III**

Doug Clark, Managing Director Liquidity Research
ITG Canada
Bank of Canada Market Structure Conference 10/25/2012



Let's Remove the Emotion from the Debate

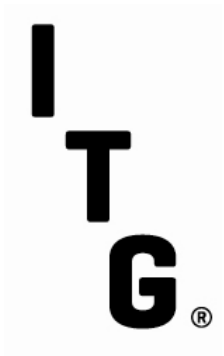
Historic Canadian Highway Stats



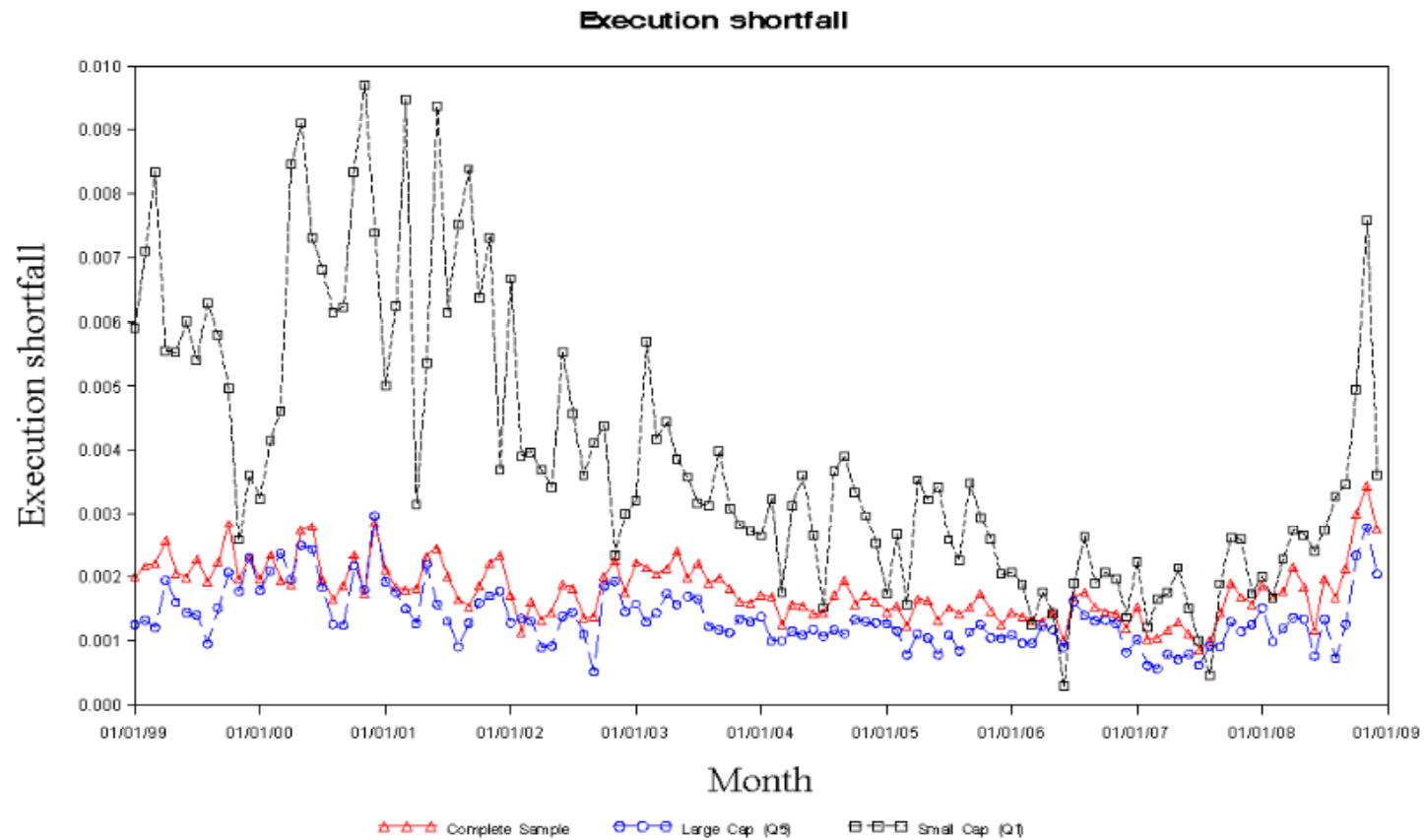
Source: Stats Canada



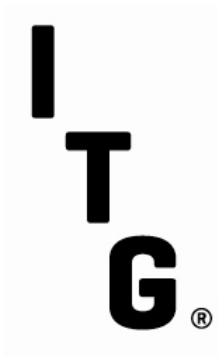
Not Broken ≠ Without Issues



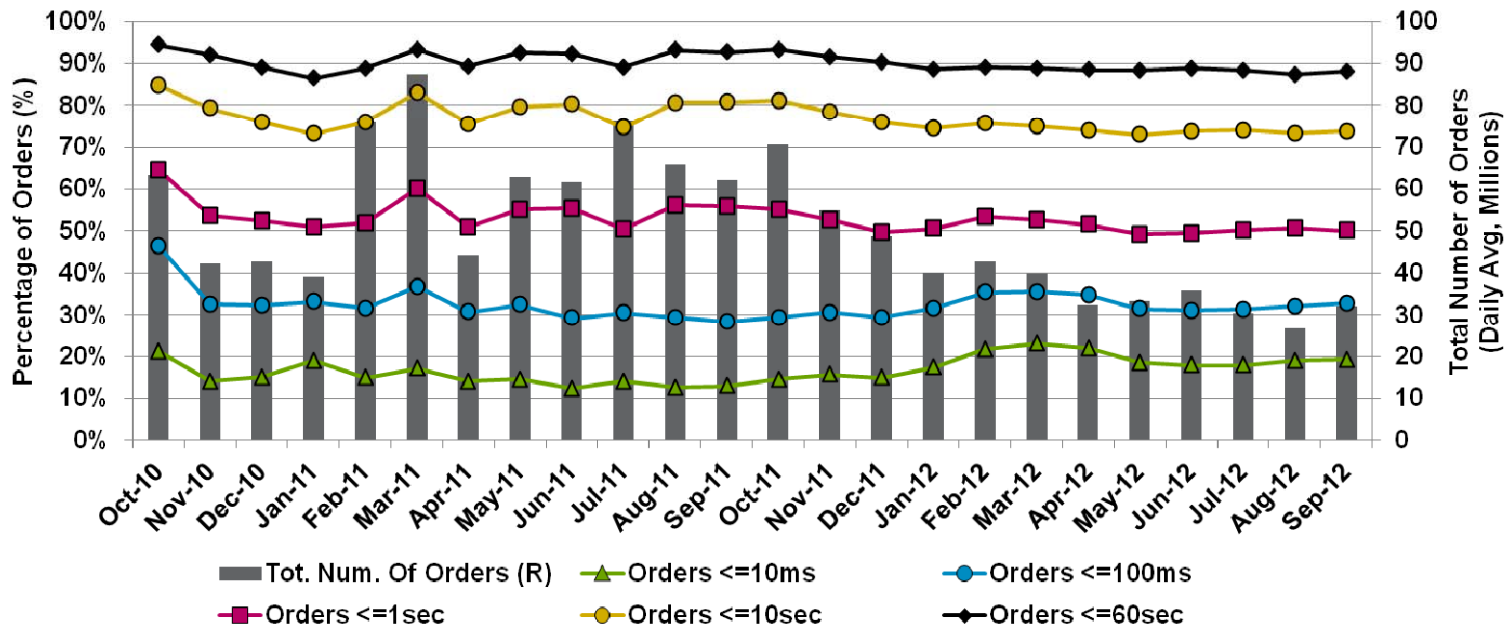
Trading Costs are Lower...



Source: Hameed, Kang & Viswanathan (2009)



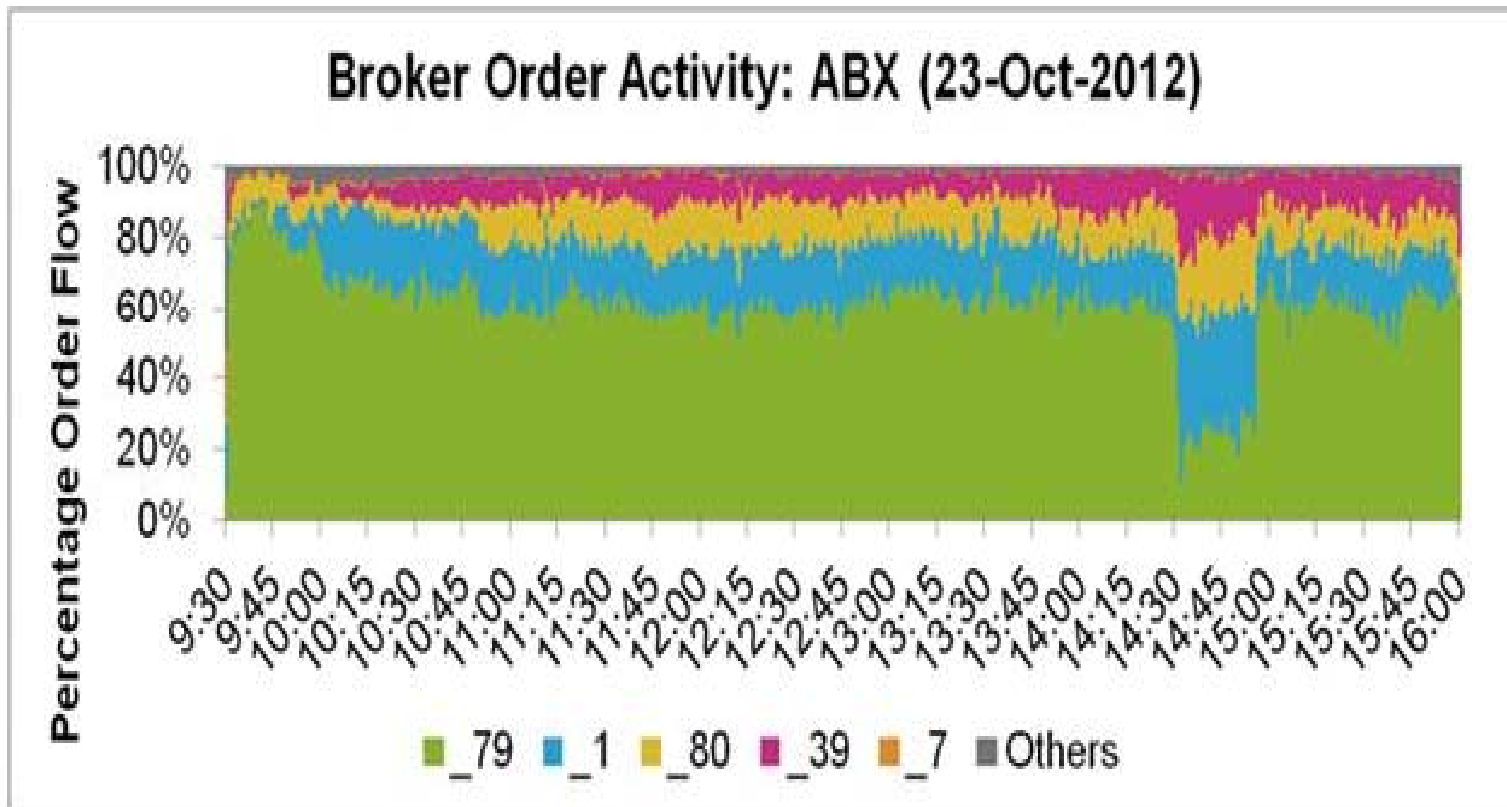
Not Broken ≠ Without Issues



- The distribution of fleeting orders is a good proxy for HFT activity in Canadian marketplaces
- In 2012, despite lower overall order flow, the percentage of orders with duration <=10ms is averaging 20%



Not Broken ≠ Without Issues



The Prevailing Narrative

- “But retail investors have also watched as a technological glitch stymied the Facebook flotation, and a “flash crash” inexplicably and briefly wiped \$860bn from the value of the market. These, along with a string of other trading mishaps – **all of them unthinkable 25 years ago** – have left investors asking if markets have become too complex and too reliant on technology to manage properly.”
- Markets: Rage against the machine – FT October 16th 2012 - Michael Mackenzie, Arash Massoudi and Stephen Foley in New York

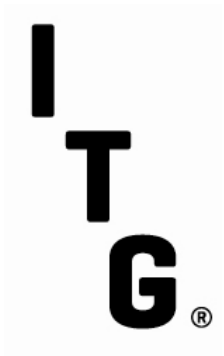


The May Flash Crash

- Political turmoil around the globe
- Market down sharply at the open
- Sometime after 2pm EST the market fell off a cliff
- A sudden, violent correction crushing the S&P500, and sending blue chips like IBM down \$20 a share or more
- Quote delays resulting in massive confusion and angst
- After 20 minutes the market begin to bounce back



The Original May Flash Crash

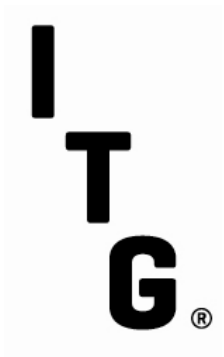


The State of the U.S. Market

- Over 100 Trading Venues
- Majority of flow is located in dark pockets away from the lit matching engine
- Prop traders quickly adopting to new technologies to gain advantage over others

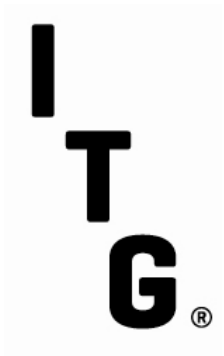


“New” Technology - 1895



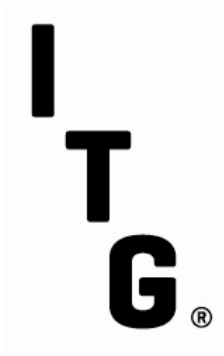
The Fragmentation Cycle

- Technology leads regional markets to consolidate into National markets
- Concerns around the service and innovation lead to new entrants
- Consolidate – Re-fragment – Consolidate – Re-fragment – Rinse – Repeat
- **One big change – for profit exchanges**



Fragmentation in a nutshell

- “I guess I sum up the answer as to why we have ECNs as the fact that the national stock exchanges, and I’m not only talking about ours, but the exchanges around the world haven’t been keeping pace with the needs of the market” – Frank Zarb, Chairman and CEO of NASD, Oct. 1999



Not All Fragmentation is the Same

- New competitors can be maverick disrupters – Instinet, Chi-X Europe
- New markets can introduce complexity and fragmentation for the sake of complexity and fragmentation – Intra-market Fragmentation
- Recent global trend for unsustainable fragmentation paid for by regulatory subsidy – Canada's gift to the world.

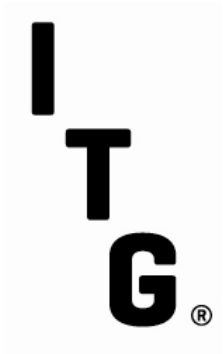


Fragmentation, The Academic View

- “Since the fragmentation and competitive effects of somewhat more or less off-board trading are both quite small, off-board trading seems to have limited policy importance.”-Hamilton (1979)
- Is market fragmentation harming market quality? Our results suggest the answer is no....we find little evidence that fragmentation is degrading market quality measures.” O’Hara and Ye (2009)

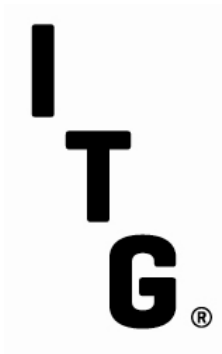


Dark is Just Another Form of Fragmentation



Dark Pools Steal Volume from Lit Markets????

- “Liquidity on the TSE is diminishing as more trading moves upstairs. This trend threatens the credibility of central price discovery and impairs market liquidity, especially for retail investors and smaller brokerage firms”. – A Blueprint for Success – 1998



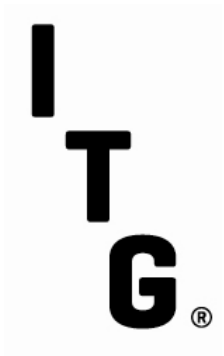
Dark Pools, The Academic View

- Fong, Madhavan & Swan (2004) – no loss of liquidity from the continuous book
- QSG study for NYFIX(2008) – dark pool executions reduce market impact of trades by as much as 62%
- Gress (2006) – Crossing networks have no detrimental impact on liquidity in the continuous book
- Conrad, Johnson & Wahal (2003) Orders executed in dark have lower average execution costs
- Weaver (2010) – The lone antagonist ???

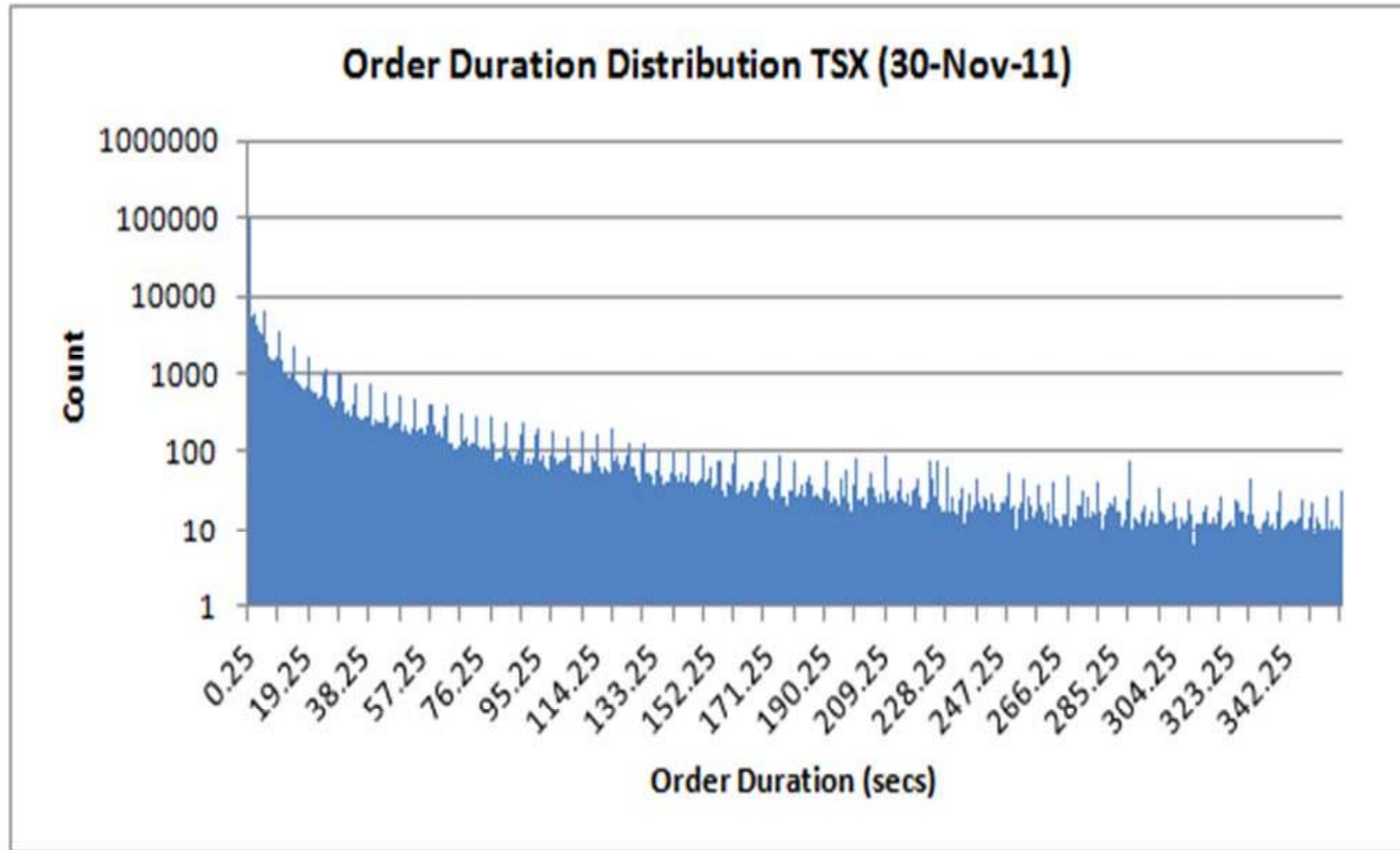


Dark vs. Upstairs

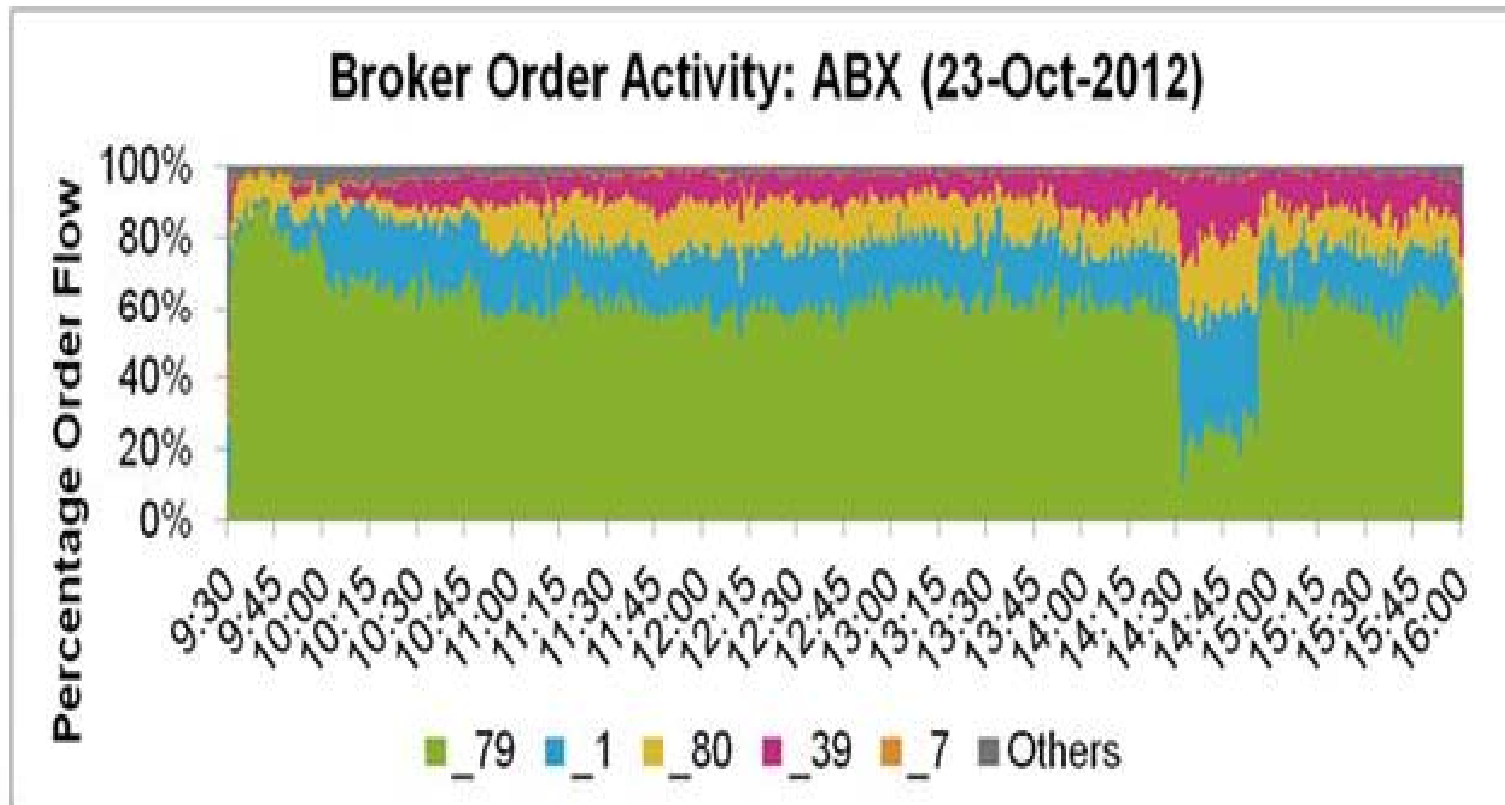
- Anyone can play
- Retail gets the same price (or better) as Institutional
- Rule sets are known and fair
- Transparent allocation methodology
- Post Trade Transparency



Why use dark at all?



Why Use Dark at All?

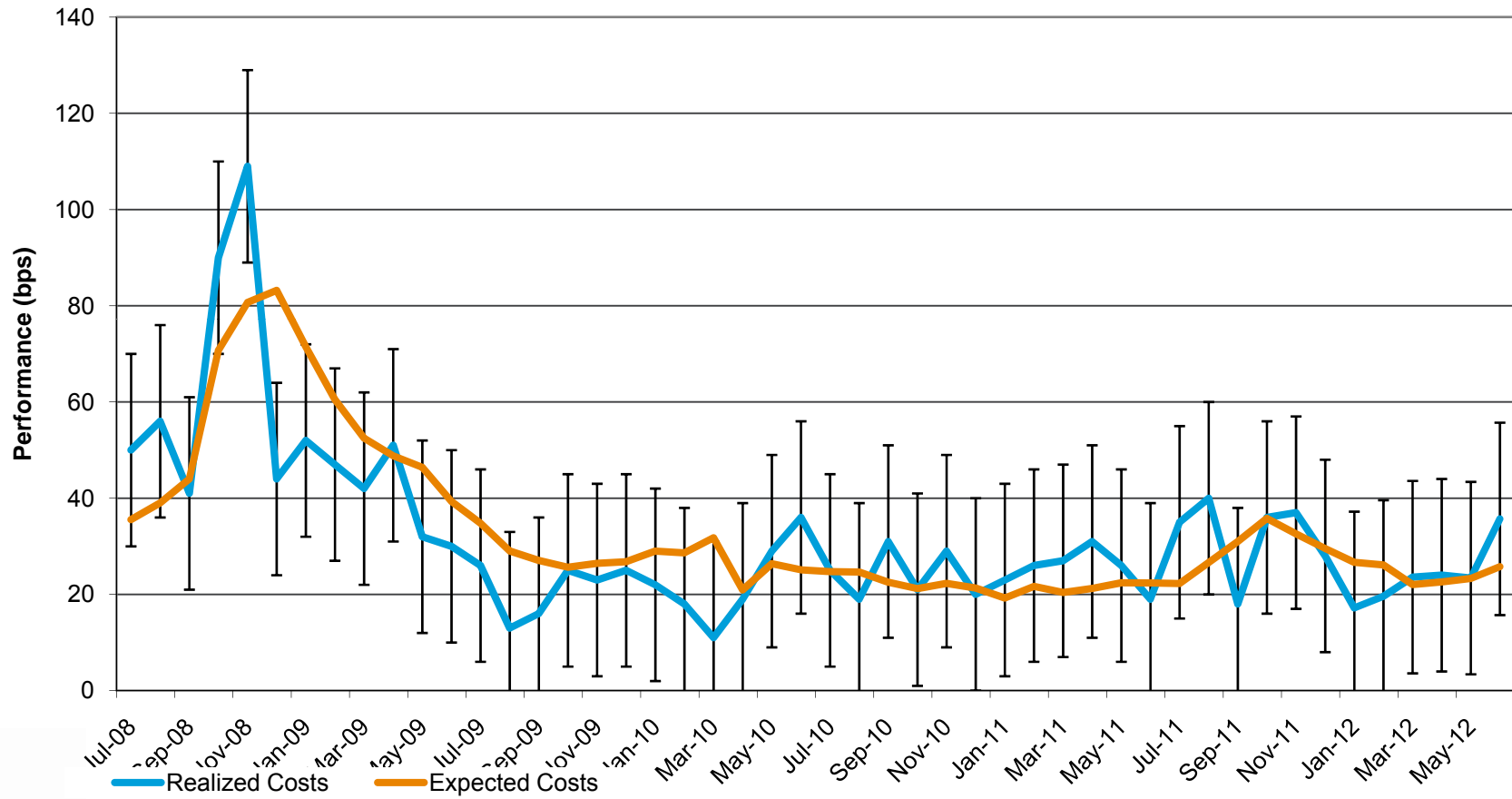


Why Are We Outlawing Dark?

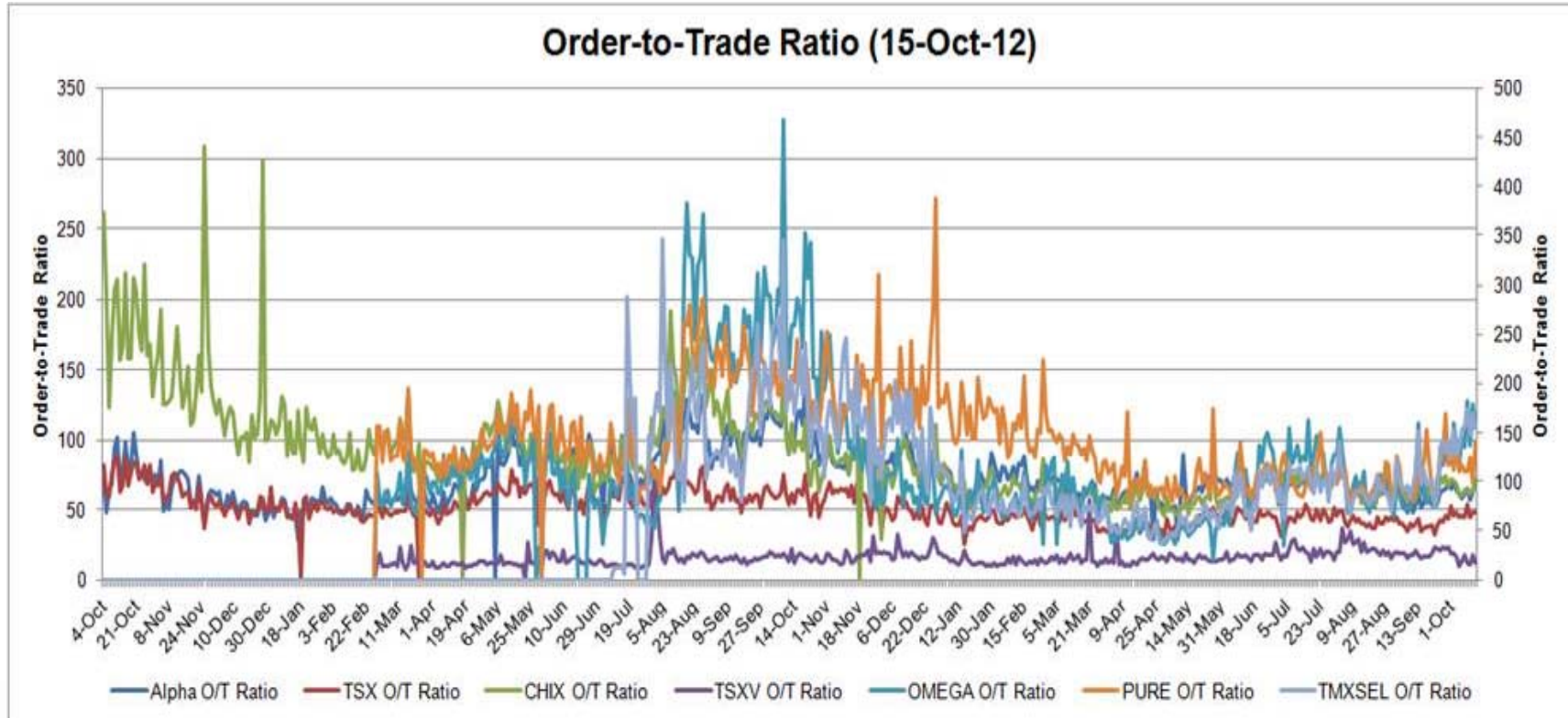


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Equity Markets vs. Other Asset Classes



Thoughtful Regulation

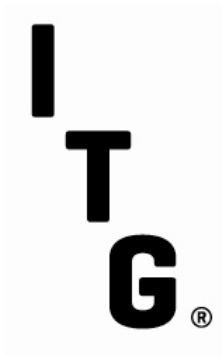


The Appropriate Regulatory Response

- Data driven
- Consider marketplace robustness when contemplating change
- Attempt to educate away fears before regulating away ghosts
- A cooperative approach – Practitioners and Academics must do some heavy lifting



- Questions?



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