
What went wrong on October 15th: Perfect storm or global warming?

Frankfurt, 27 January 2015

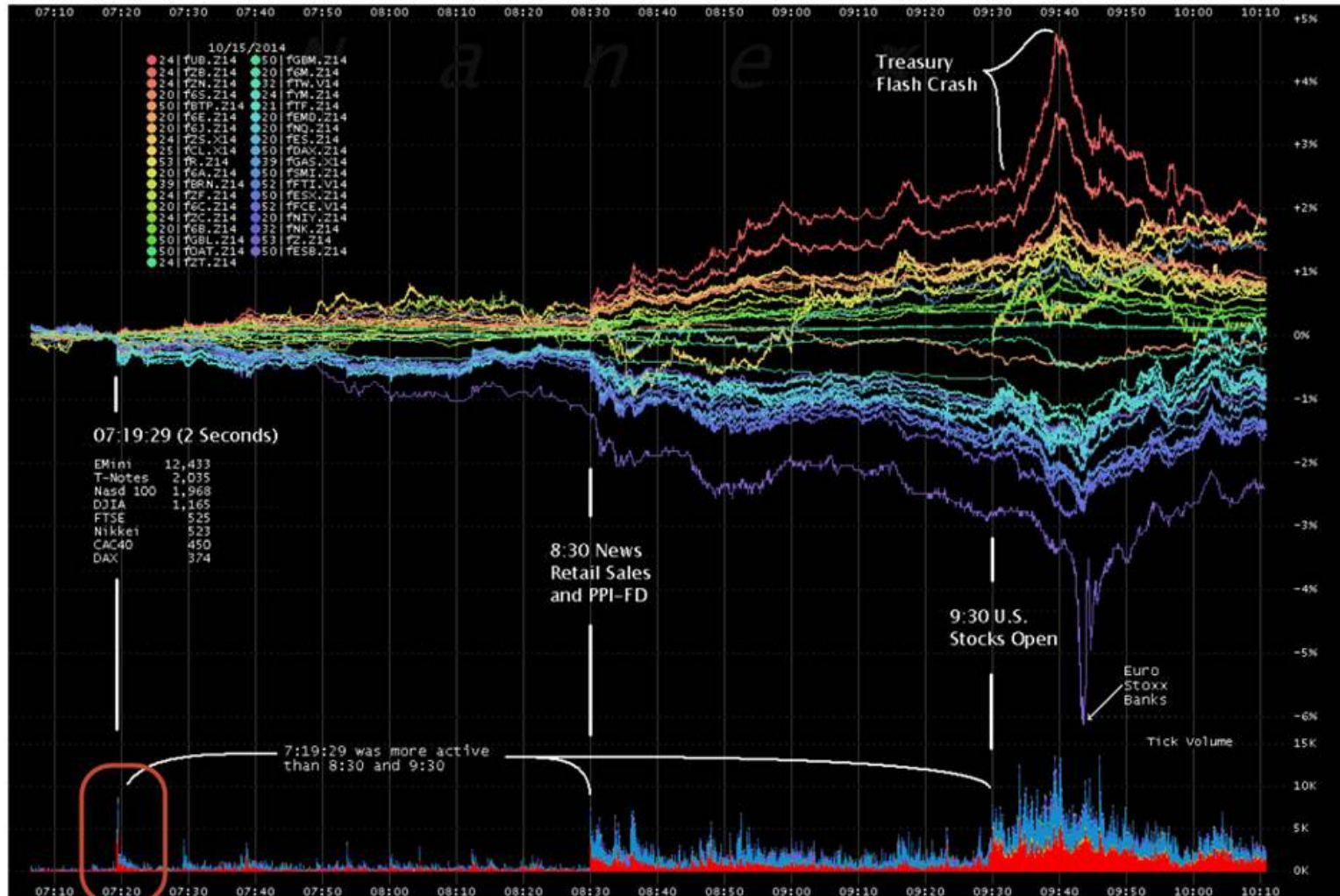
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Bad Timing: Columbus Day and IMF risk-aversion



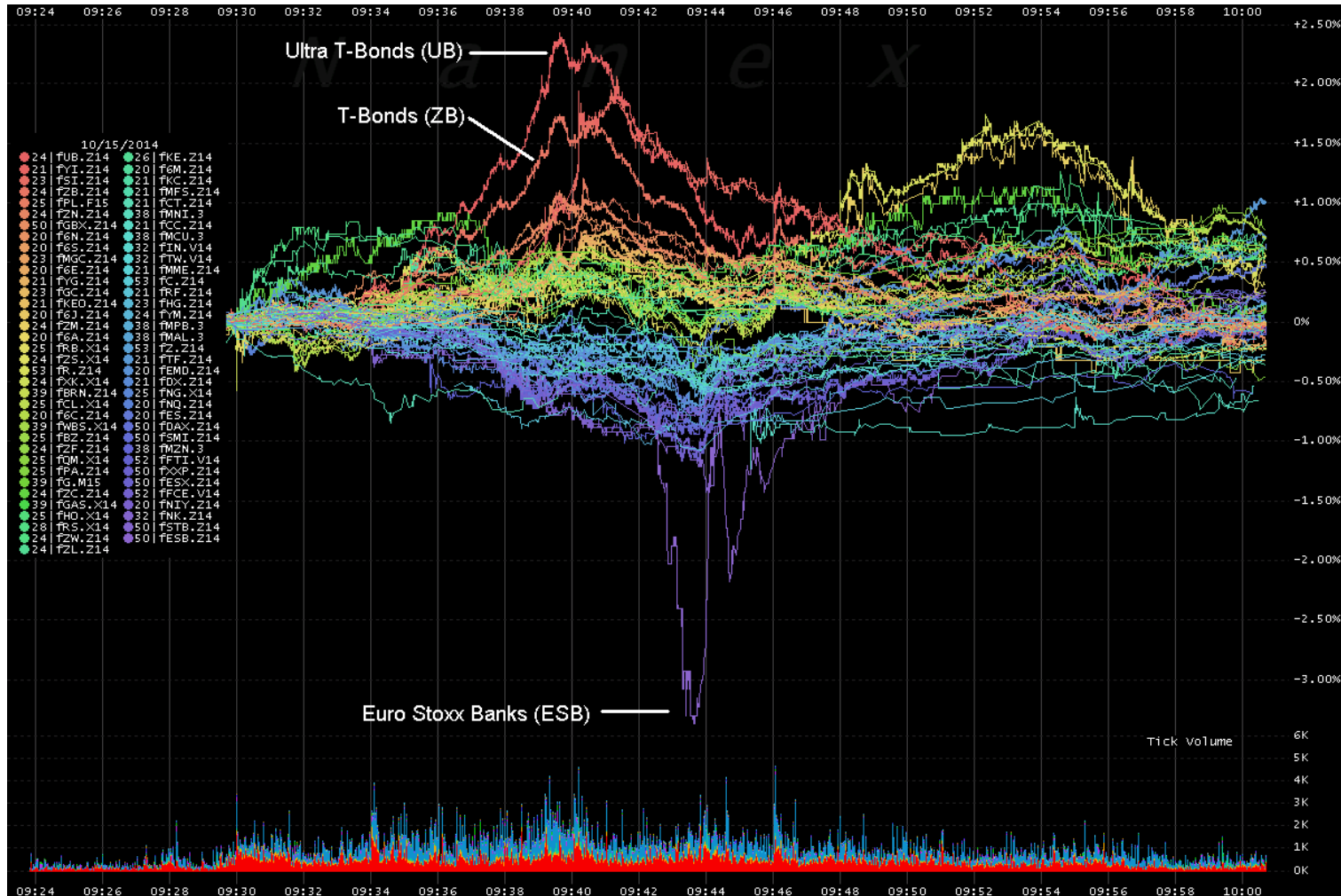
Source: Bloomberg

Equities drove the risk aversion



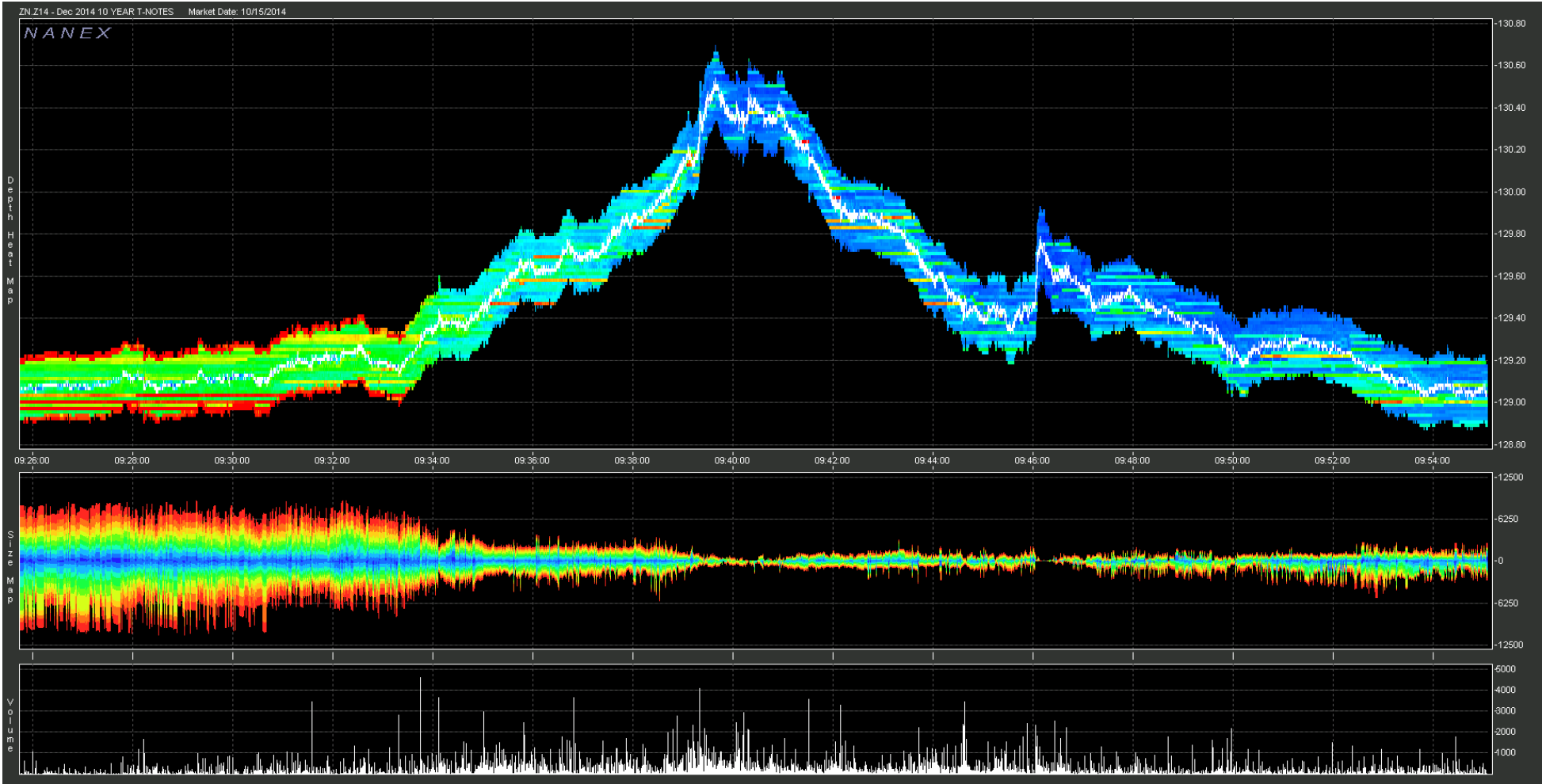
Source: Nanex

HFT correlation algorithms kick in, causing dislocations



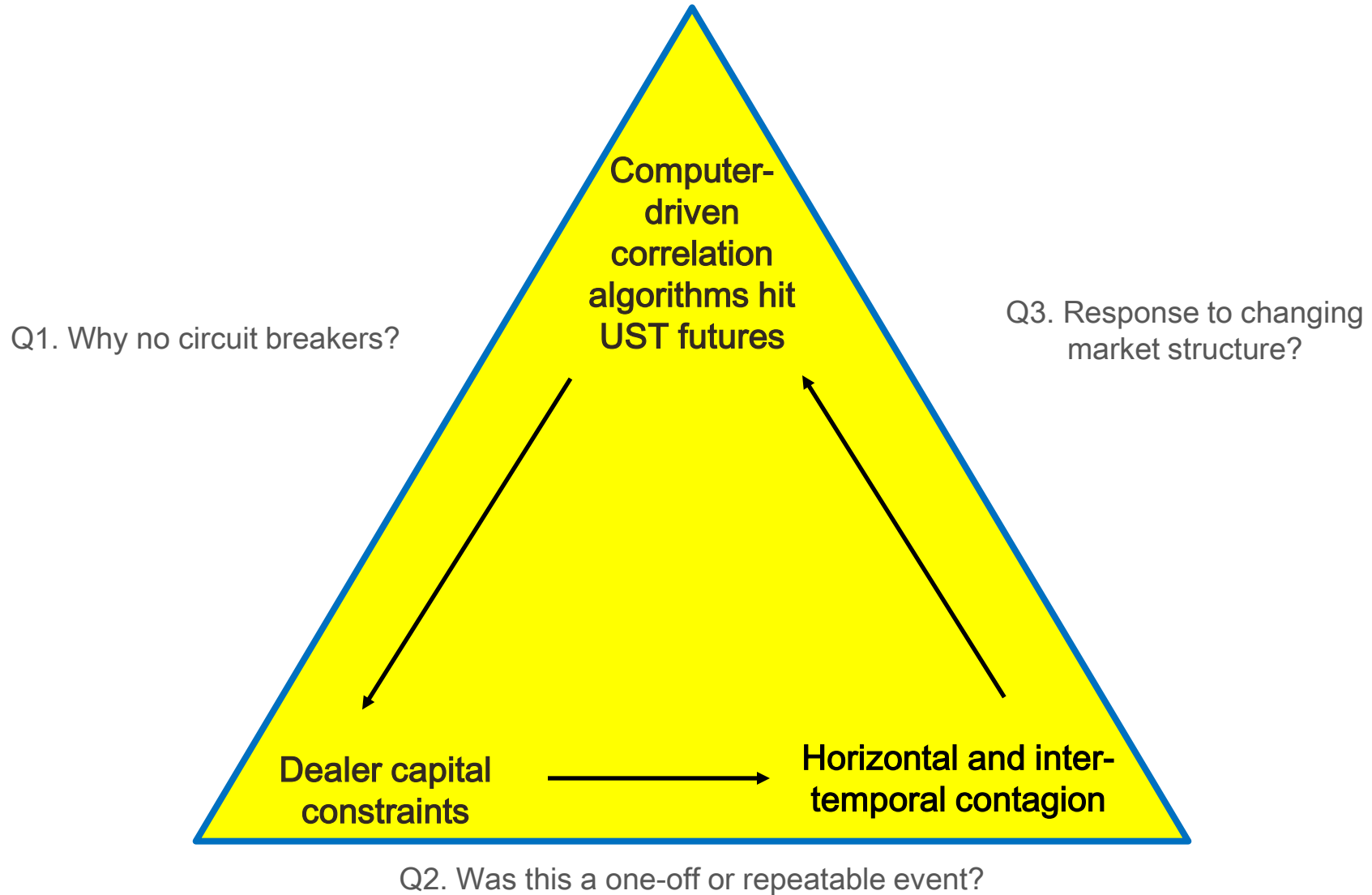
Source: Nanex

Collapse in market depth as computers unplugged



Source: Nanex

Feedback loops and open questions



Annex charts

Summary

Catalysts/context

- Weak economic data
- IMF annual meeting “herd behavior” after Eurokrise fears re-emerge
- Pimco leadership change (short gamma positioning)
- Concentrated hedge fund losses (GSE lawsuit, oil price decline and failed AbbVie-Shire merger)

Market structure

- Capital-constrained dealers
- HFT algorithms prompt contagion and subsequent illiquidity
- Failure of market safeguards(?)
- Inter-temporal echo effects

Catalyst: Worse-than-expected growth data



Catalyst: Inflation forecast errors across jurisdictions

Fig. 4: Inflation surprises of G20 countries

Country	Date last updated	Headline		Core	
		Actual	Consensus	Actual	Consensus
US	Aug-14	1.7	1.9	1.7	1.8
Argentina	n.a.	n.a.	n.a.	n.a.	n.a.
Australia	Q2 2014	3.0	3.0	2.8	n.a.
Brazil	Sep-14	6.8	6.7	6.5	n.a.
Canada	Aug-14	2.1	2.1	2.1	2.1
China	Aug-14	2.0	2.2	1.6	n.a.
Eurozone	Sep-14	0.4	0.3	0.7	0.9
France	Sep-14	0.3	0.4	0.2	n.a.
Germany	Sep-14	0.8	0.8	1.2	n.a.
India	Sep-14	6.5	7.1	n.a.	n.a.
Indonesia	Sep-14	4.5	4.6	4.0	n.a.
Italy	Aug-14	-0.2	n.a.	0.4	n.a.
Japan	Aug-14	3.3	3.3	2.3	n.a.
Mexico	Sep-14	4.2	4.2	3.3	n.a.
Russia	Sep-14	8.0	8.0	8.2	n.a.
Saudi Arabia	Aug-14	2.8	n.a.	n.a.	n.a.
South Africa	Aug-14	6.4	6.2	10.2	n.a.
Korea	Sep-14	1.1	1.5	1.9	n.a.
Turkey	Sep-14	8.9	9.4	9.3	n.a.
UK	Sep-14	1.2	1.4	1.5	1.8

Note: Australia CPI data is quarterly; the latest is for Q2 2014.

Source: Bloomberg

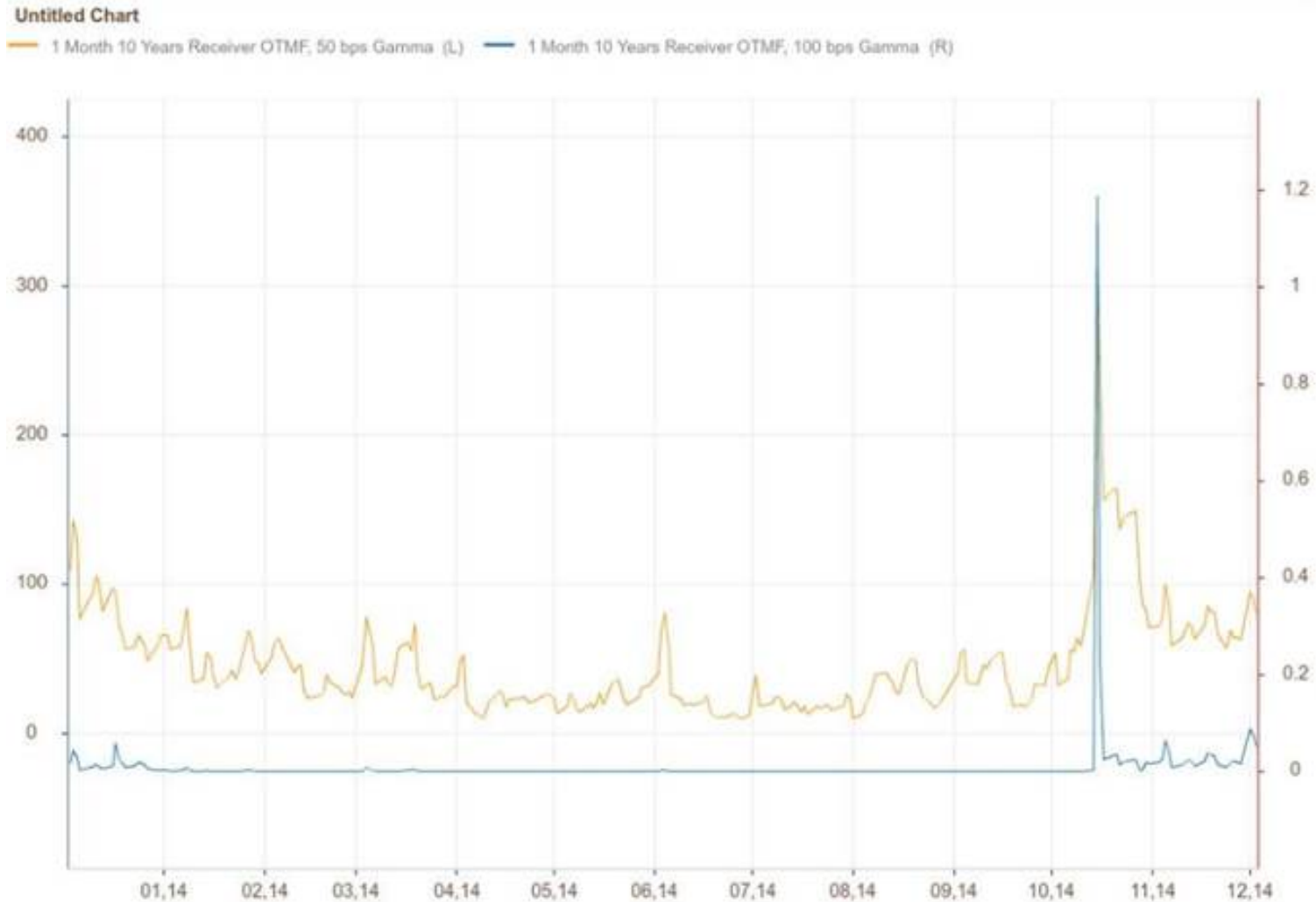
Catalyst: Collapse of AbbVie-Shire merger

A. Top 10 hedge fund holders of Shire				
Hedge Fund	Quantity	Market value	Market value owned	Manager position size
Paulson & Co	9,046,000	\$2,343,366,000	4.58%	9.73%
Adage Capital Management	3,267,220	\$846,373,000	1.65%	2.09%
OrbiMed Advisors*	2,169,000	\$561,880,000	1.10%	5.82%
Citadel Investment Group	933,401	\$241,797,000	0.47%	0.30%
Mason Capital Management	832,014	\$215,533,000	0.42%	2.26%
AQR Capital Management	816,116	\$211,415,000	0.41%	0.50%
Westchester Capital Management	810,337	\$209,918,000	0.41%	2.59%
Third Point	750,000	\$194,288,000	0.38%	2.51%
Cadian Capital Management	730,925	\$189,346,000	0.37%	4.97%
Perry Capital	695,800	\$180,247,000	0.35%	6.54%
*including call options				
Source: SEC filings, Novus Partners				

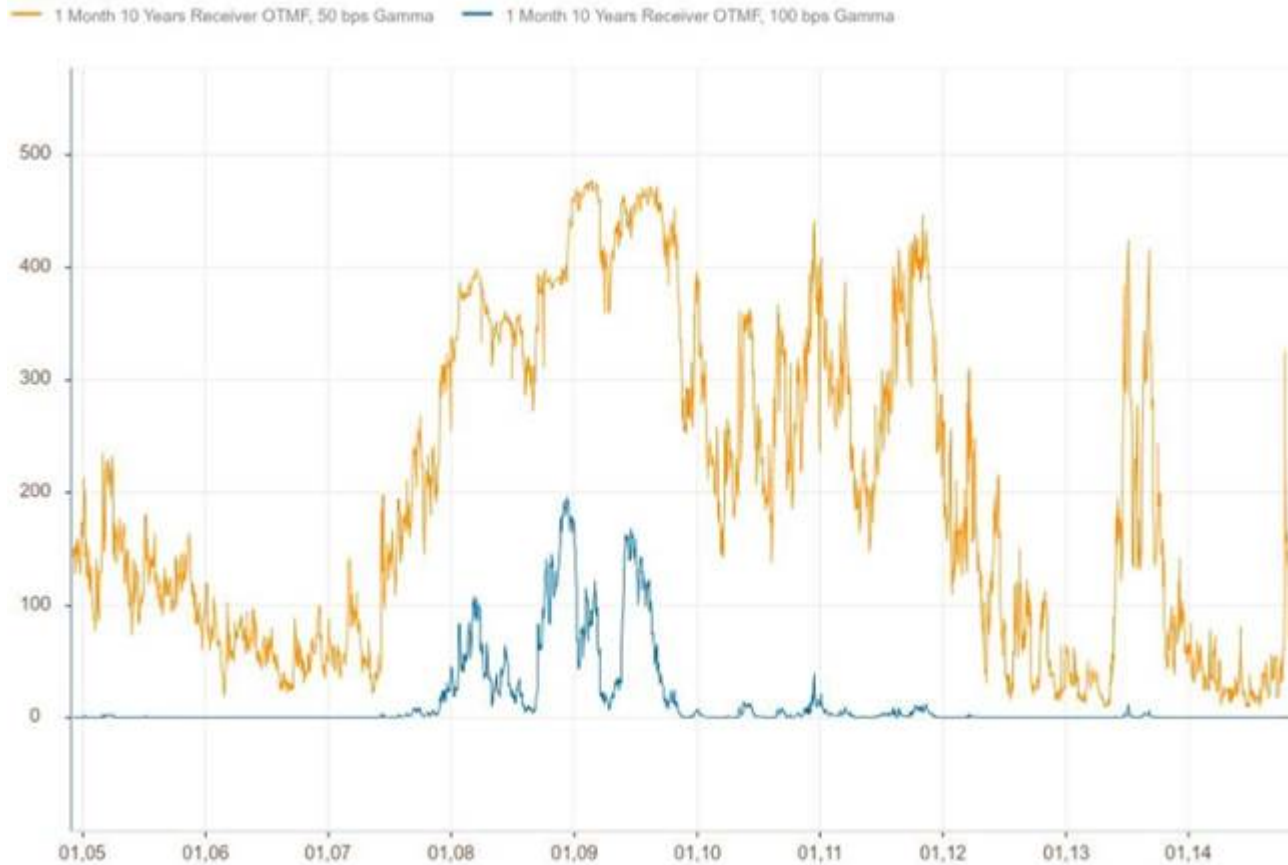
Catalyst: Heavy hedge fund losses in Sept-October

Performance	Jan-Aug	Sep-Oct
Hedge Fund Index	3.4%	-0.8%
Convertible Arbitrage Hedge Fund Index	2.1%	-2.5%
Dedicated Short Bias Hedge Fund Index	-7.5%	0.5%
Emerging Markets Hedge Fund Index	0.6%	-1.0%
Equity Market Neutral Hedge Fund Index	-1.2%	0.2%
Event Driven Hedge Fund Index	5.2%	-3.5%
Event Driven Distressed Hedge Fund Index	5.7%	-2.7%
Event Driven Multi-Strategy Hedge Fund Index	5.0%	-3.9%
Event Driven Risk Arbitrage Hedge Fund Index	1.9%	-3.8%
Fixed Income Arbitrage Hedge Fund Index	3.9%	0.3%
Global Macro Hedge Fund Index	2.1%	-0.4%
Long/Short Equity Hedge Fund Index	3.4%	-0.2%
Managed Futures Hedge Fund Index	4.6%	3.6%
Multi-Strategy Hedge Fund Index	3.9%	0.5%

Positioning: Receiver gamma spiked

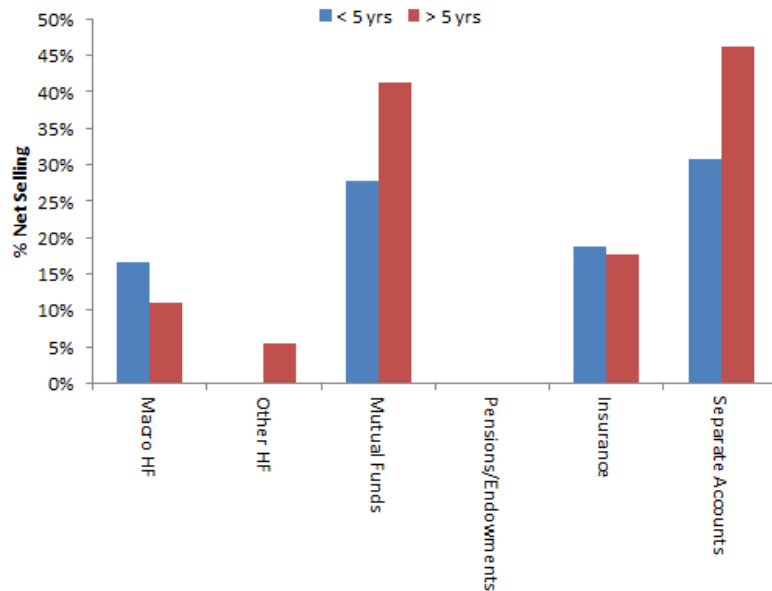


But spike not extreme relative to history. A market structure issue?

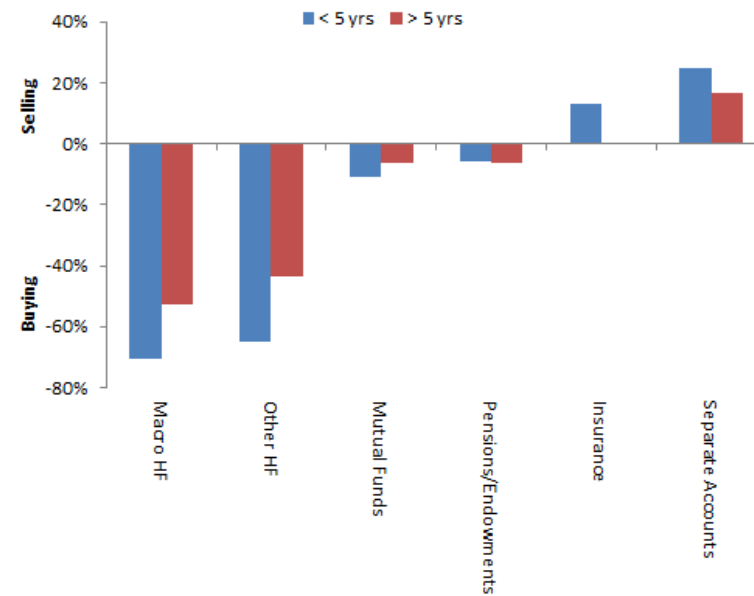


Fed survey provides insight on activity

Activity by account-type, duration prior to October 15

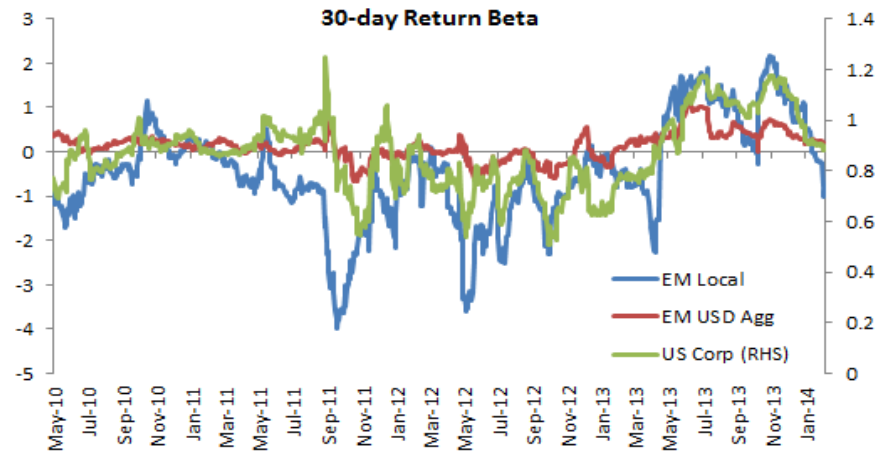
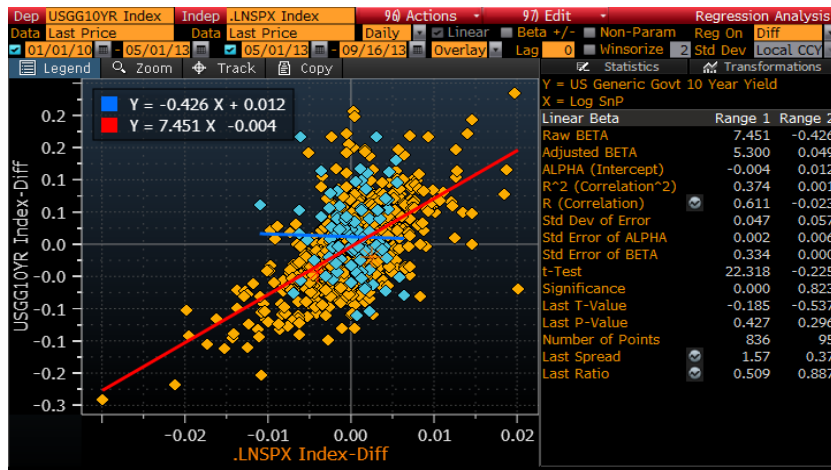


Activity by account-type, duration morning of October 15



- Prior to October 15th, asset managers were selling fixed income.
- However, activity on the morning of the 15th not consistent with the magnitude of short positioning heading into the event.
- Suggests cross-asset influence.

October 15th not unique: Correlation break drove taper tantrum



- Portfolio balance effects of QE resulted in highly correlated markets
- Negative term premia and policy expectations constrained by the zero bound removed fixed income portfolio hedging/diversification benefit.
- Post taper-talk, correlation reversed as term premium normalized and rates became a Texas hedge.

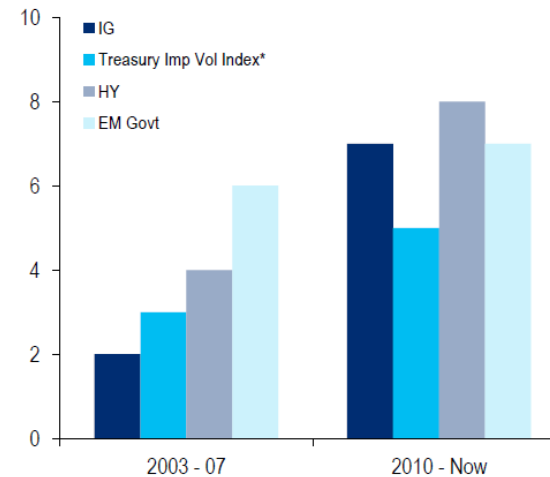
Compared to '03-'07, the post-crisis environment has seen nearly twice as many jumps in risk

Number of meaningful spikes in volatility, current vs. previous credit cycle

	Definition of Meaningful Risk Increase	2003 - 07	2010 - Now
HG	20+ bp	2	7
HY	75+ bp	4	8
Treasury Imp Vol Index*	40+ bp	3	5
EM Govt	50+ bp	6	7
Total	—	15	27

Source: Citi Research
* - MOVE Index

Number of meaningful spikes in volatility, current vs. previous credit cycle



Source: Citi Research
* - MOVE Index

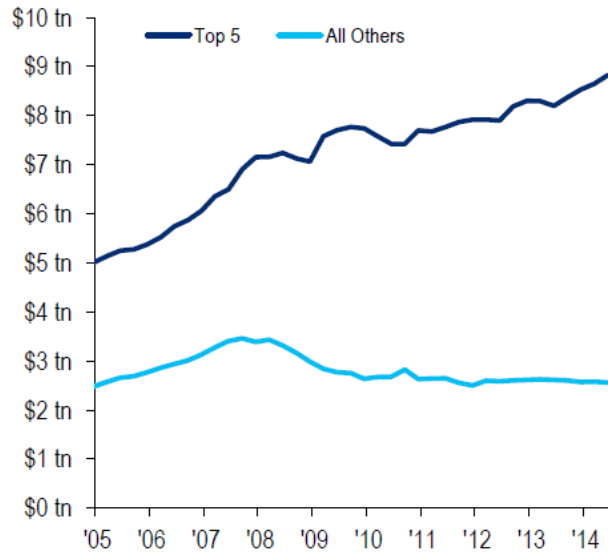
Fundamental:

- Depressed animal spirits – proximity to crisis increases investor risk aversion despite high realized Sharpe ratios of financial conditions
- Endogenous macro risks – integrated global capital markets + Global Savings/Financing Glut drives common factor risks across global economies

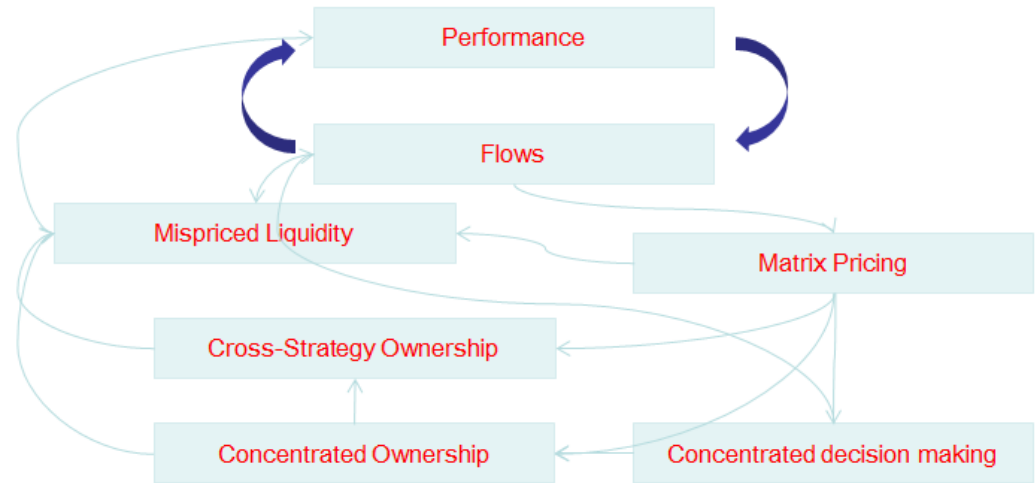
Technical: Basel III/regulatory response driving less diverse financial ecosystem, increasing procyclicality

New risks to the fixed income beauty contest

Amount of corporate bonds held by top 5 investor types vs. all others (18 investors)



Source: Citi Research
 Note: As of June 30, 2014



1. Unlevered investors have incentive to run via performance beauty contest
2. Market structure and asset concentration exacerbate incentives to run

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