

Joint Staff Report: The U.S. Treasury Market on October 15

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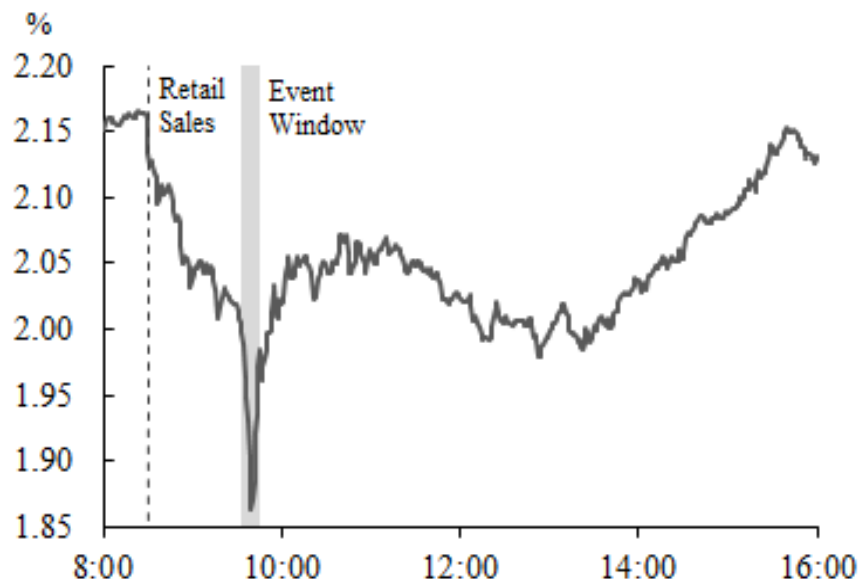
What happened on October 15, 2014?

- Significant initial yield declines following a modestly worse-than-expected September U.S. retail sales report at 8:30 am ET
- An hour later, despite the apparent absence of news, abrupt roundtrip in prices over the course of 12-minute “event window”
 - From 9:33 to 9:39 am ET, the 10-year Treasury cash yield decreased by 16 basis points
 - Between 9:39 and 9:45 am ET, the yield reversed course, nearly retracing its decline
- Intraday range of 37 basis points fourth largest since 1998, but net change on day of only six basis points
- Trading volumes in the Treasury market on the day posted record highs, and reached 6 to 10 times their average levels during the event window

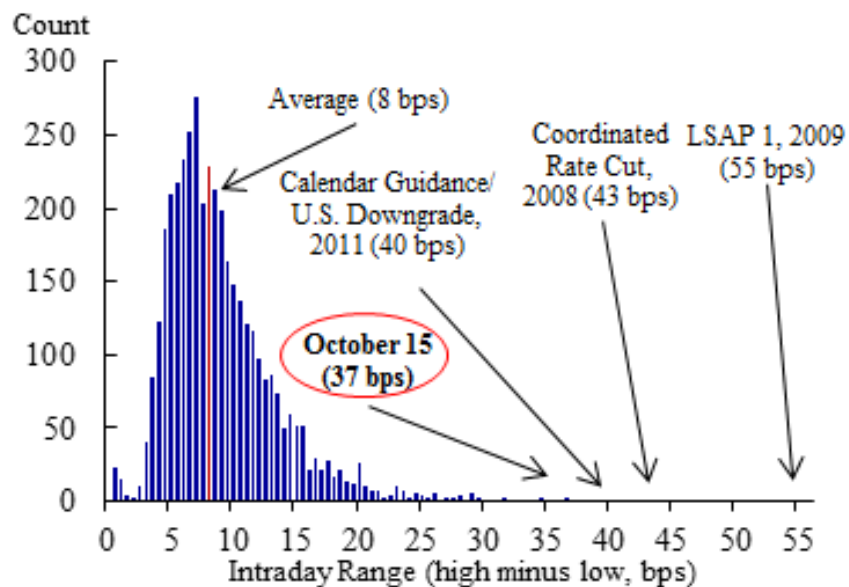


The Events of October 15

10-Year Treasury Yield on October 15 (Cash)

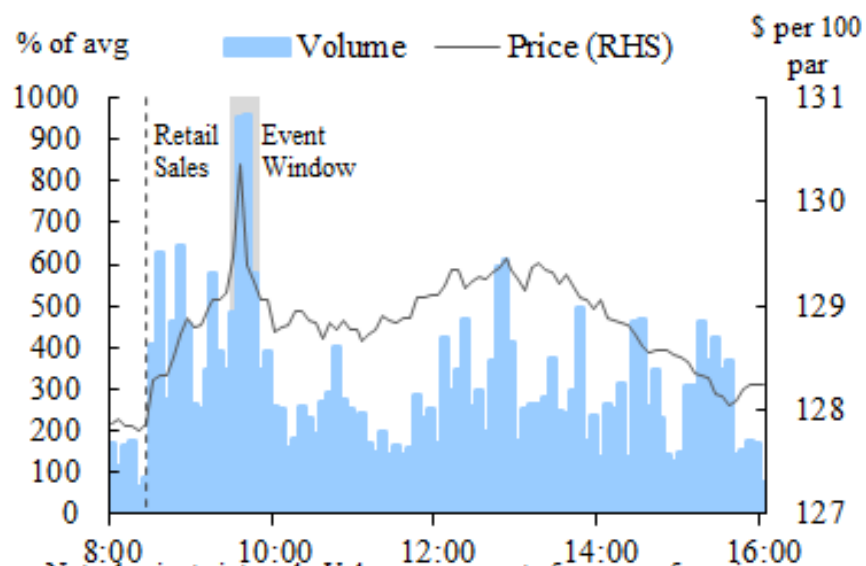


Historical Intraday Yield Ranges for 10-Year Treasury (Cash)



The Events of October 15

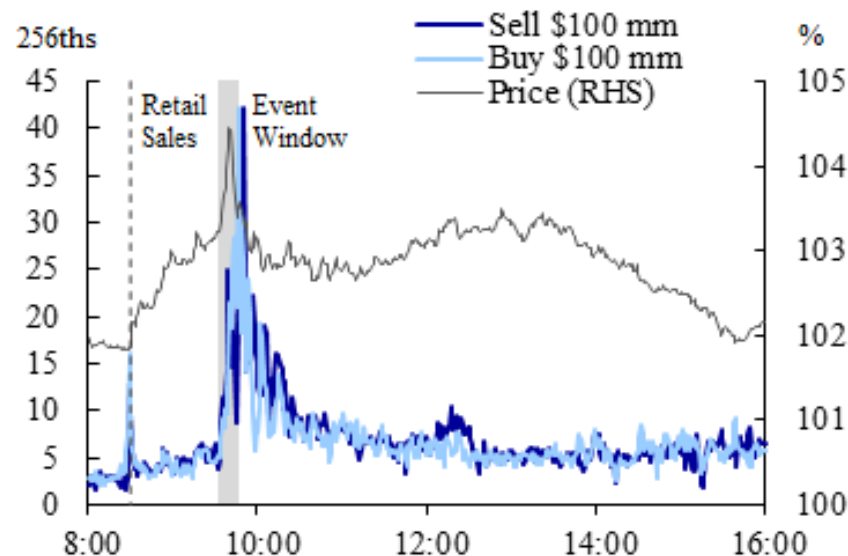
Intraday Price and Volume in 10-Year Treasury (Futures)



Note: 1-minute intervals; Volume as percent of average of previous 30 trading days

Source: Staff calculations, based on data from Bloomberg.

Cost of Conducting Trade (Cash)



Note: 1-minute intervals; Spread between best bid/ask and volume-weighted average price to complete trade; \$ per \$100 par
Source: Staff calculations, based on data from BrokerTec.



- ***The U.S. Treasury Market on October 15, 2014***
 - Report of staff findings from the U.S. Treasury, Board of Governors of the Federal Reserve System, The Federal Reserve Bank of New York, the U.S. Securities and Exchange Commission, and the U.S. Commodity Futures Trading Commission
 - Report summarizes preliminary findings on October 15 event
 - Based on transaction-level public and non-public data from futures (CME) and cash interdealer markets (BrokerTec and Espeed)
 - No dealer-to-customer data included
 - Describes day with focus on event window
 - Describes important aspects of the current Treasury market structure as well as a series of next steps for consideration
 - <http://www.treasury.gov/press-center/press-releases/Pages/jl0106.aspx>



Summary of Findings

- Analysis reveals no *single* cause for the abrupt moves
- However, a *number* of factors may have contributed:
 - Concerns about global growth, Ebola and policy weighed on investor sentiment and positions, likely triggered outsized response to data
 - Both Principal Trading Firms (PTFs) and bank-dealers reduced risk exposure to volatility
 - Significant decline in order book depth before 9:30 am ET may have impacted price discovery, transaction cost, and price impact of trades
 - During event window, marked shift in order flow and liquidity provision
 - PTFs sharply increase their activity, initiating buy (and then sell) trades
 - Bank-dealers increase activity, but to lesser degree, and intermittently withdraw offers to sell
 - Unclear whether increase in latency in futures trade processing or elevated self-trading contribute to price action
- Many of these factors reflect notable changes in market structure



Report Structure

- Section 1: Background on Treasury Market, Regulation, and Data
- Section 2: The Events of October 15
- Section 3: Key Findings on October 15 and the Event Window
- Section 4: Observations about Treasury Market Structure
- Section 5: Next Steps



Section 2: Classification and Trading Characteristics

Category	Typical Characteristics
Bank-Dealer	Bank owned dealer engaged in client trading and market making, mix of high and low frequency, directional trading, some of which may stem from client flows, SEC-registered broker-dealer.
Non-bank Dealer	Independent dealer, mainly trading for clients (agency investing) or market making, mix of high and low frequency, occasional directional trading stemming from client flows, SEC-registered broker-dealer.
Hedge Fund	Agency investing (rule 144A), no leverage restrictions, some automated market making but mostly low frequency trading, may be registered as broker-dealer, but does not have clients as in a typical broker-dealer business model.
Asset Manager	Agency investing for retail or institutional investors, limited leverage, long investment horizon, intermittent large directional flows spanning multiple trading sessions, low frequency trading.
Principal Trading Firm (PTF)	Principal investor, deploys proprietary automated trading strategies, low latency typically key element of trading strategies, may be registered as broker-dealer but does not have clients as in a typical broker-dealer business model.



Section 3: Key Findings on October 15 and the Event Window

Volume on October 15 by Firm Type (Cash)

Firm Type	5 Year	10 Year	30 Year
Asset Manager	0.0%	0.0%	0.0%
Bank/Dealer	30.1%	35.7%	40.6%
Hedge Fund	9.0%	5.6%	6.0%
PTF	57.1%	54.8%	51.4%
Non-bank Dealer	3.9%	3.9%	2.0%
Total Volume (\$ millions)	150,386	123,198	21,915

Note: Unless otherwise noted, tables are based on entire trading session, 19:30 prev. day – 17:30 ET

Source: Staff calculations, based on data from [BrokerTec](#).

Volume on October 15 by Firm Type (Futures)

Firm Type	5 Year	10 Year	Long Bond
Asset Manager	4.0%	3.3%	2.3%
Bank/Dealer	11.5%	17.6%	10.9%
Hedge Fund	7.8%	8.3%	8.7%
PTF	69.3%	59.4%	64.9%
Non-Bank Dealer	1.4%	2.4%	2.1%
Other	6.0%	8.9%	11.2%
Total Volume (\$ millions)	498,546	779,519	229,408

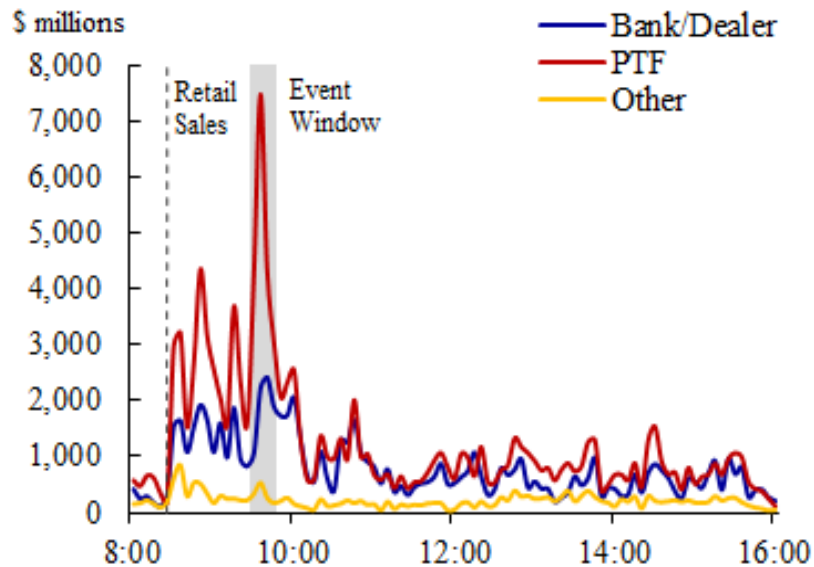
Note: Unless otherwise noted, tables are based on entire trading session, 18:00 prev. day – 16:00 ET; Front month contract

Source: Staff calculations, based on data from CME Group.



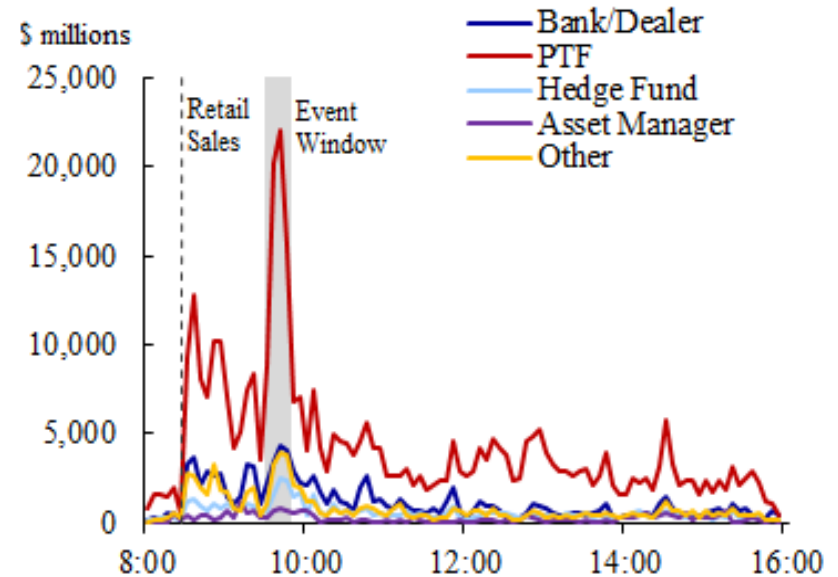
Section 3: Key Findings on October 15 and the Event Window

10-Year Intraday Volume by Firm Type (Cash)



Note: 5-minute intervals; Gross volume
Source: Staff calculations, based on data from BrokerTec.

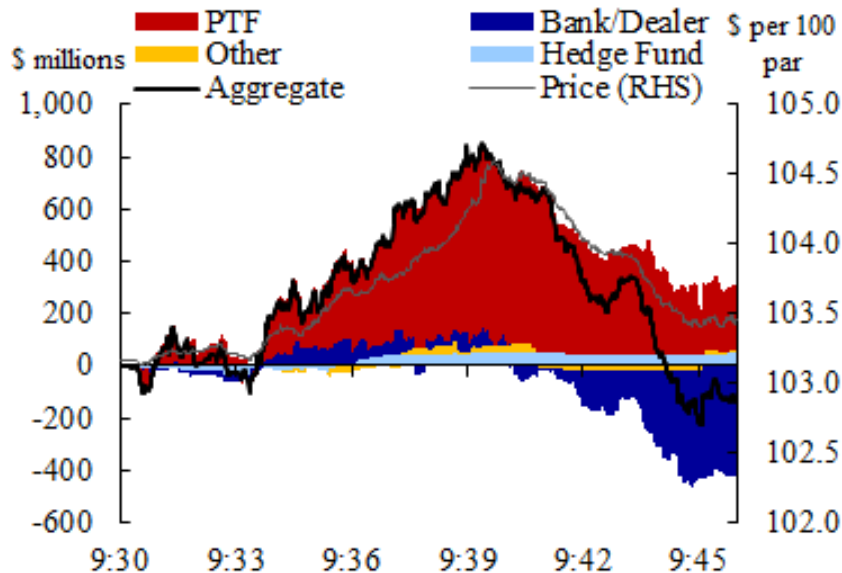
10-Year Intraday Volume by Firm Type (Futures)



Note: 5-minute intervals; Gross volume; Front month contract
Source: Staff calculations, based on data from CME Group.

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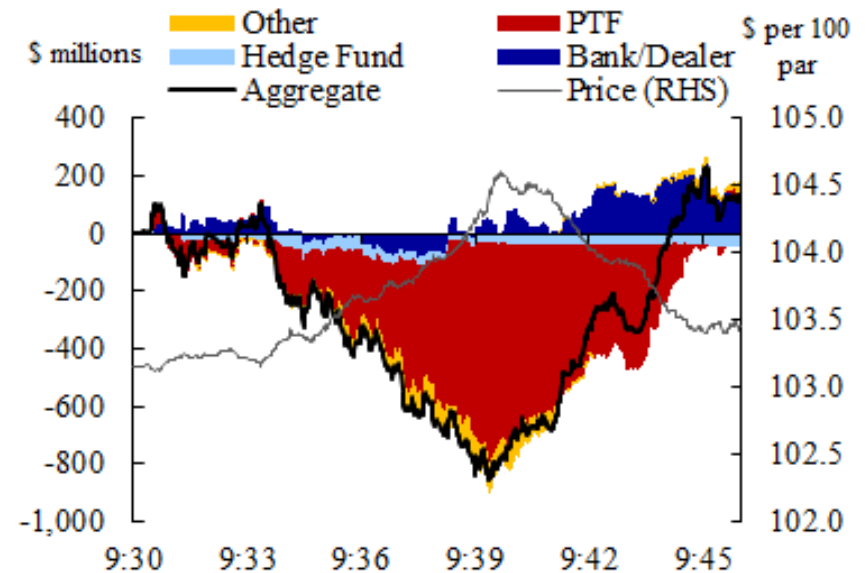
10-Year Cumulative Net Aggressive Volume (Cash)



Note: Stacked 1-second observations

Source: Staff calculations, based on data from BrokerTec.

10-Year Cumulative Net Passive Volume (Cash)

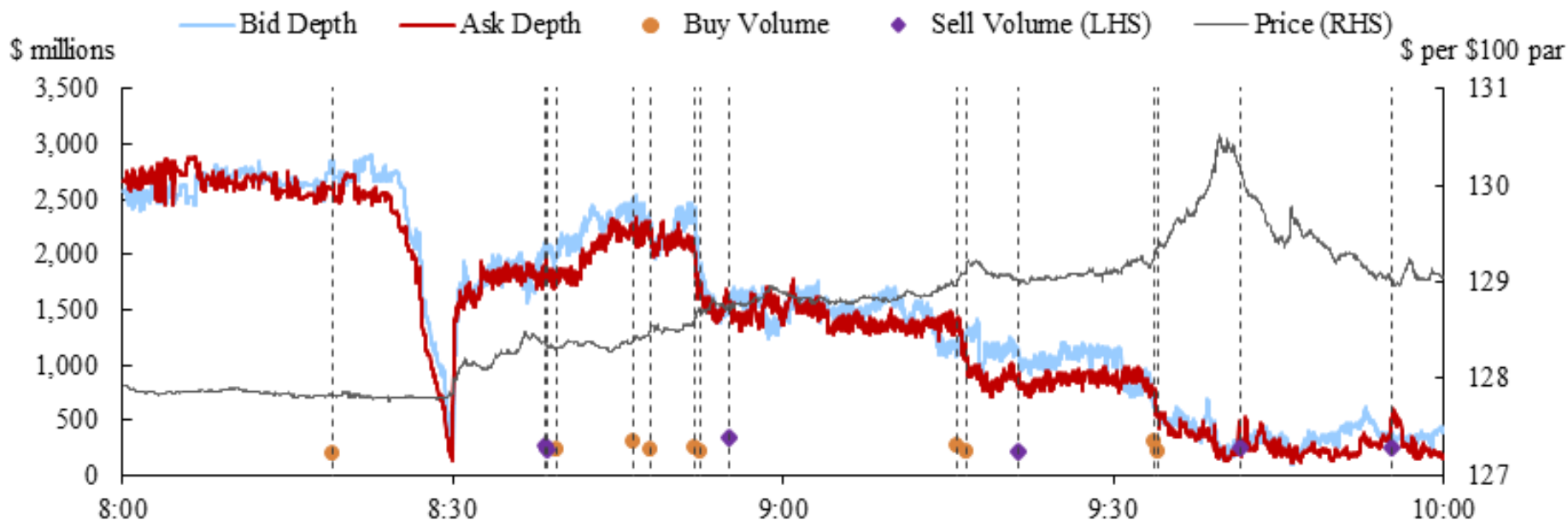


Note: Stacked 1-second observations

Source: Staff calculations, based on data from BrokerTec.

Section 3: Key Findings on October 15 and the Event Window

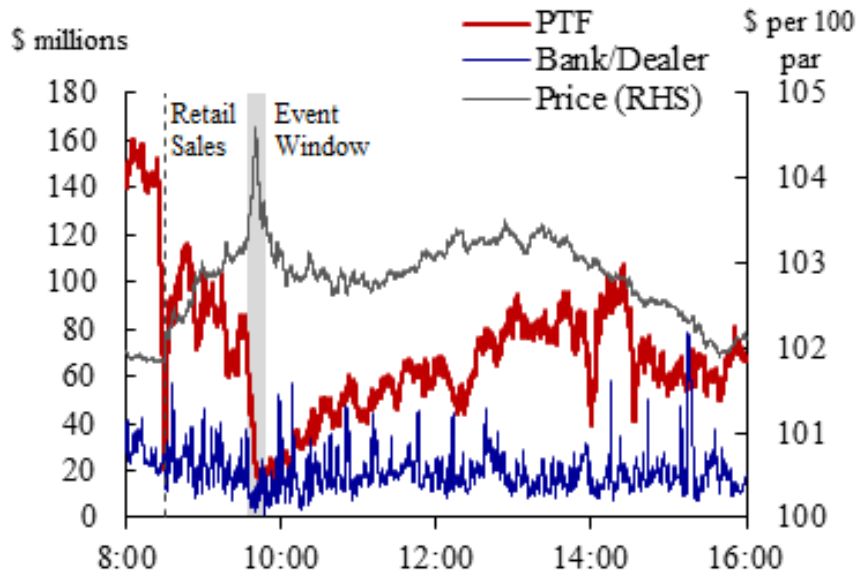
10-Year Timeline of Large Aggressive Trades (Futures)



Note: Trades > 2000 contracts; \$200 million notional; Top 10 levels; Front month contract
Source: Staff calculations, based on data from CME Group.

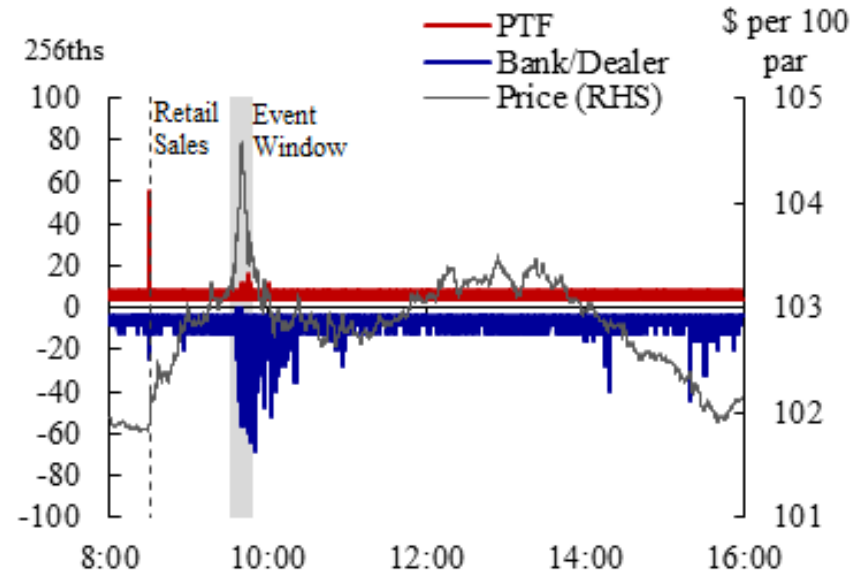
Section 3: Key Findings on October 15 and the Event Window

Depth at Top 3 Levels by Type (Cash)



Note: 1-minute moving average; Sum of top 3 levels
Source: Staff calculations, based on data from BrokerTec.

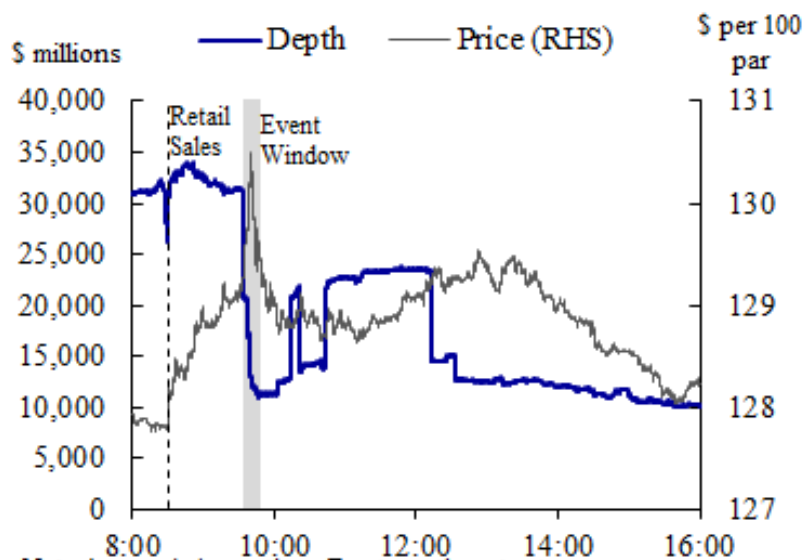
10-Year Bid/Ask Spreads by Type (Cash)



Note: 1-second observations; \$ per \$100 par
Source: Staff calculations, based on data from BrokerTec.

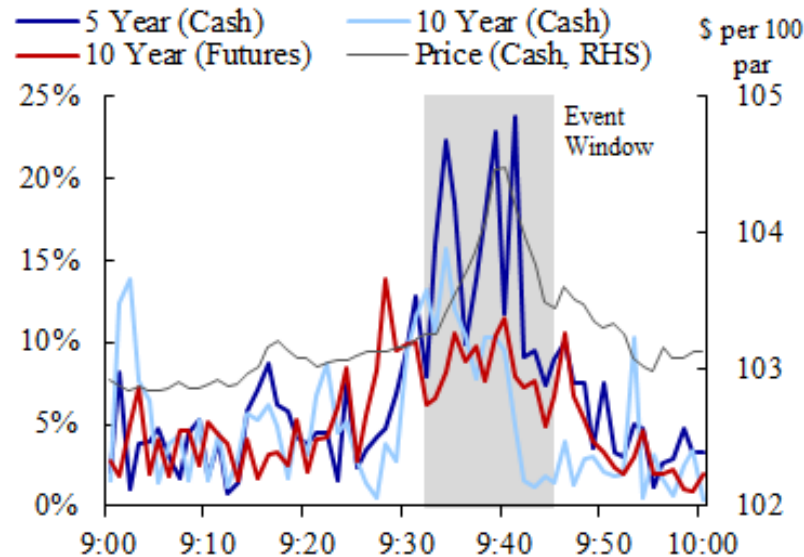
Section 3: Key Findings on October 15 and the Event Window

10-Year Total Market Depth (Futures)



Note: 1-second observations; Front month contract
Source: Staff calculations, based on data from CME Group.

Self-Trades as % of Total Volume



Note: 1-minute intervals
Source: Staff calculations, based on data from BrokerTec, CME Group.

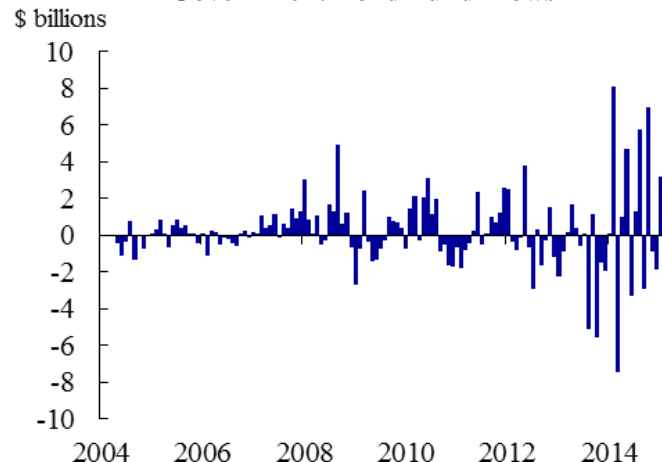
Section 4: Observations about Treasury Market Structure

Gross Treasury Positions of Primary Dealers



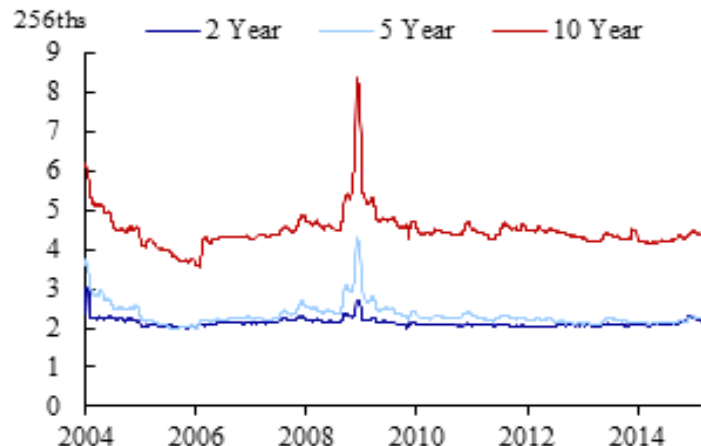
Note: 4-week moving average; Sum of dealers' short and long positions
Source: Staff calculations, based on data from FRBNY.

Government Bond Fund Flows



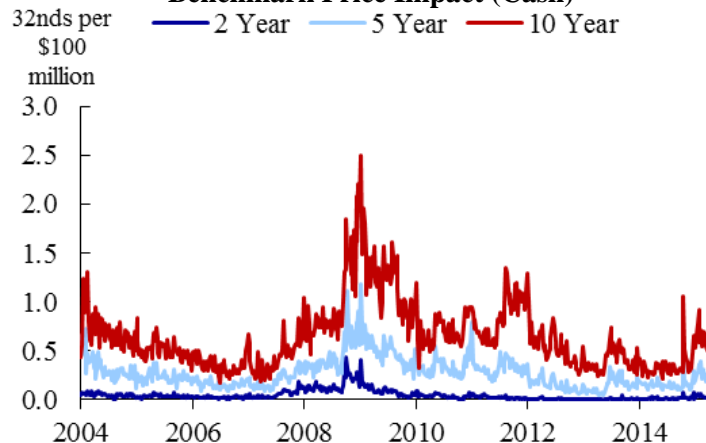
Note: Total net monthly flows; Some funds own agency debt securities and MBS in addition to Treasury securities
Source: Staff calculations, based on data from Morningstar.

Treasury Benchmark Bid-Ask Spreads (Cash)



Note: 21-day moving average; \$ per \$100 par; On-the-run notes
Source: Staff calculations, based on data from BrokerTec.

Benchmark Price Impact (Cash)



Note: Slope coefficients from weekly regressions of 5th price changes on 5th net order flow for the on-the-run notes
Source: Staff calculations, based on data from BrokerTec.

Section 4: Next Steps

- Further study of the evolution of the U.S. Treasury market and the implications for market structure and liquidity
- Continued monitoring of trading and risk management practices across the U.S. Treasury market and a review of the current regulatory requirements applicable to the government securities market and its participants
- An assessment of the data available to the public and to the official sector on U.S. Treasury cash securities markets
- Continued efforts to strengthen monitoring and surveillance and promote inter-agency coordination related to the trading across the U.S. Treasury market