



# Global Markets Monitor: Special Feature

Monetary and Capital Markets Department  
Global Markets Analysis Division

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## What Happened in US Treasuries on June 7<sup>th</sup>?

*On June 7<sup>th</sup>, the yield on the 10-year Treasury declined by about 6 bps in 3 minutes around mid-session before partially recovering over the next two minutes. The price action, which took place amid a broad sell-off in emerging market assets, was widely discussed by market participants. Some contacts suggested that the price action was related to the unwind of a hedge for a large EM position, as the move occurred amid notable weakness in EM currencies. Others suggested that, given the speed, the episode could have been a 'flash' event driven by an algorithm. To gauge the underlying drivers, we held discussions with electronic principal trading firms, traditional broker-dealers, as well as a treasury futures exchange. While the event had no spillover implications, it is a reminder that the composition and behavior of market-makers has changed profoundly since the financial crisis and the implications for market liquidity and financial stability are not yet well understood.*

**What factors led to the repricing?** During the morning of June 7<sup>th</sup>, 10-year Treasury yields declined nearly 6 bps from 2.94%, before nearly fully retracing over a roughly 10-minute span. Traditional broker dealers were a bit puzzled by the price action. Most of our market contacts were not entirely sure what led to the development. The most commonly cited factors included thin liquidity conditions, a potential algorithmic error, perhaps a large asset reallocation trade or hedging activity tied to weakness in emerging markets. It is worth noting that liquidity was reported to have normalized shortly afterwards. Many of these explanations appeared somewhat speculative.

**What did the transaction-level data show?** According to data on the 10-year September 2018 treasury futures contract from the Chicago Mercantile Exchange, overall activity was fairly standard ahead of the episode.<sup>1</sup> From 8AM to about 12:30PM central standard time (CST) the price of the futures contract rose from a price of about 119-07 to about 119-17, a relatively modest change amid reportedly normal liquidity conditions.<sup>2</sup> There was steady buying interest throughout the morning, with several participants, including a global bank reducing a short position in the 10-year futures contract and several large principal trading firms (PTFs) establishing positions.<sup>3</sup> Overall volumes in the 10-year contract for the day reached 2.2 million

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<sup>1</sup> CME provided aggregated participant-level transaction data covering a few hours on the September 2018 Treasury futures contract. Treasury futures are traded at the Chicago Board of Trade (CBOT), a regulated futures exchange, and settle against an underlying Treasury security. The CBOT exchange is owned by the CME Group. FINRA provided Treasury cash transactions-level data.

<sup>2</sup> A price of a futures contract of 119-07 equates to a value of 119% of par plus 7/32nds.

<sup>3</sup> Principal trading firms (PTFs) typically represent more than half of traded volumes in the treasury futures market.

contracts, a bit higher compared to prior sessions, but not outsized compared to month-end. Periods of market volatility tend to coincide with increased trading volumes.

Figure 1 displays the market for the September 2018 10-year futures contract. The depth in the order book for the 5 best bid and offer prices was about 20,000 contracts throughout the day, which is considered a normal level. The balance of the order book, the net number of bid and offer contracts, was slightly weighted towards the bid side, particularly after 11:30AM CST. This is consistent with the moderate rise in the price of the futures contract observed at this time.

**Figure 1: September 2018 10-year Futures Contract Price and Order Book Depth**



Source: CME Group

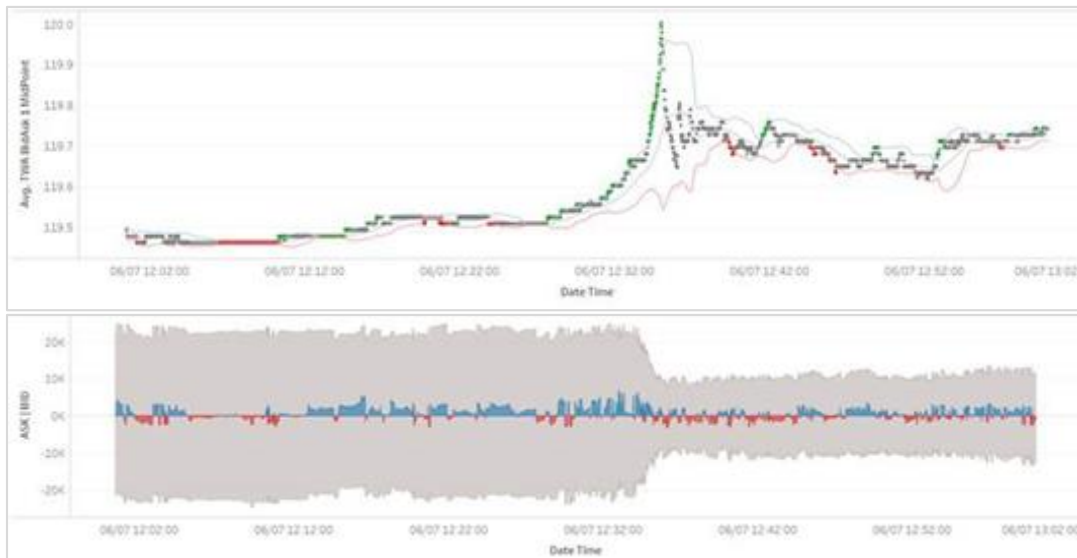
Note: The blue and red shaded areas are the balance of the book at the best five bids and offers. Blue = the best bids outweighed the best ask; red = the best asks outweighed the best bids; and grey = cumulative depth of book at five price levels. When the imbalance favors the bid, that implies increased buying interest; an imbalance favoring the ask implies greater selling interest.

At about 12:28PM CST, a series of aggressive (liquidity reducing) bids were entered by a variety of different participants and participant types. Bids were entered for a lot size of 1300 at 1:30, a lot size of 1000 at 12:32PM, and followed by bids for lots of 2100 and 2300. While the size of these bids was not considered unusual, given the market conditions, one market participant characterized them as having been entered by a 'price-insensitive individual' (i.e., the investor placing the order appeared to prioritize immediacy of trade execution over receiving the best possible price). The largest bid (for 2600 contracts) was entered at 12:34:08PM. Exhibit 2 shows greater granularity over a 1-hour time frame. Altogether, roughly 115k on the September contract reportedly traded over the course of a few minutes.

In this environment of reduced book depth, a series of resting stop orders (orders previously placed by traders to exit trades at a certain price level) were triggered, with 85 buy stops (for 4500 contracts) elected during 12:34-12:35PM CST. With thinner liquidity, the price of the September 2018 contract climbed notably. Still, no single order traded at more than two price

levels, suggesting that while liquidity was reduced, it was by no means impaired. The stop logic and velocity logic safeguards (triggers that allow for a momentary pause in trading) were never close to being triggered. Overall, the CME characterized the price action as a fairly typical 'short squeeze,' where a move in price forces short sellers to close their positions, in turn exerting even greater pressure on prices. Following the execution of the resting stop orders and the spike in price, the balance of the order book turned negative (more offers than bids) and the price retraced. However, the depth of the order book remained lower throughout the remainder of the event window.

**Figure 2: September 2018 10-Year Futures Contract Price and Order Book Depth – 1-hour window**



Source: CME Group

Note: The blue and red shaded areas are the balance of the book at the best five bids and offers. Blue = the best bids outweighed the best ask; red = the best asks outweighed the best bids; and grey = cumulative depth of book at five price levels. When the imbalance favors the bid, that implies increased buying interest; an imbalance favoring the ask implies greater selling interest.

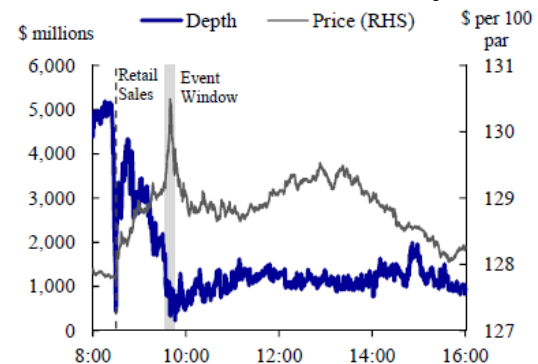
**In short, trade sizes in the futures market do not appear to have been unusually large.** The bid for 2600 contracts was reportedly the 35<sup>th</sup> largest order entered for the September 2018 contract since June 1. The order was filled at one price level, suggesting that there was still adequate liquidity in the contract. However, after the order was filled, the depth of book started to deteriorate, falling by about half. No significant liquidity providers were observed to have 'unplugged.' Instead, it appears that liquidity providers broadly decided to pull back and restrict the quantity they were displaying at particular price levels. Order book depth remained depressed for nearly two hours following the episode. The top five levels of bid and asks was roughly 48k in the run-up to the correction, and dipped to 20k contracts as liquidity dried up, before eventually returning to 39k contracts by 2PM CST. Such pullbacks are fairly common around imbalanced markets, but a reduction in book depth can lead to volatile price action.

**There are important differences with the episode on October 15, 2014,** which saw record-high trading volumes, a much larger intraday trading range (16 bps round-trip over 15 minutes,

representing the fourth largest intraday range since the financial crisis) in the absence of a major news event. On June 7<sup>th</sup>, by contrast, pressures were building in emerging markets that were reportedly accompanied by increased flight-to-quality flows. Further, in contrast to the October 2014 event, there was no apparent evidence of differentiated behavior between PTFs and broker dealers, nor reports of individual dealers reaching risk limits and pulling back liquidity. The typical liquidity providers stayed in the market. (By contrast, official analysis covering the October 2014 episode showed that the spike in trading volume and volatility coincided with a sizeable reduction in the depth of orders provided by PTFs and with the posting of much wider bid-ask spreads and a brief withdrawal from the offer side of the book by bank dealers.<sup>4</sup>) But, perhaps reflective of the lasting effect of imbalances that build up, the depth of book eroded for a fairly protracted period during both events (Figure 3).

**Financial stability implications.** While liquidity refreshed and broader liquidity metrics remain favorable, such sharp, short-term disruptions reinforce the need to continue to monitor and evaluate shifts in market microstructure and changes in the supply and demand for liquidity. Such changes have implications for the cost of financing for a wide range of instruments. Taken to the extreme, sustained increases in illiquidity and bouts of volatility could affect individual treasury auctions, and could trigger margin calls with ripple effects throughout the financial system, as investors sell assets to meet those margin calls.<sup>5</sup>

**Figure 3: Market Depth in Futures Market Pre- and Post-Oct 2015 Flash Rally**



Source: JSC (2015), based on data from CME Group  
Note: 1-second observations; sum of top 10 levels; front month contract

<sup>4</sup> See *Joint Staff Report: The U.S. Treasury Market on October 15, 2014*, July 13, 2015 (JSR, 2015).

<sup>5</sup> For a discussion of possible measures to reduce the likelihood of such event occurring see Bouveret, Antoine, Peter Breuer, Yingyuan Chen, David Jones, 2015, "Fragilities in the U.S. Treasury Market: Lessons from the 'Flash Rally' of October 15, 2014", IMF WP/15/222.