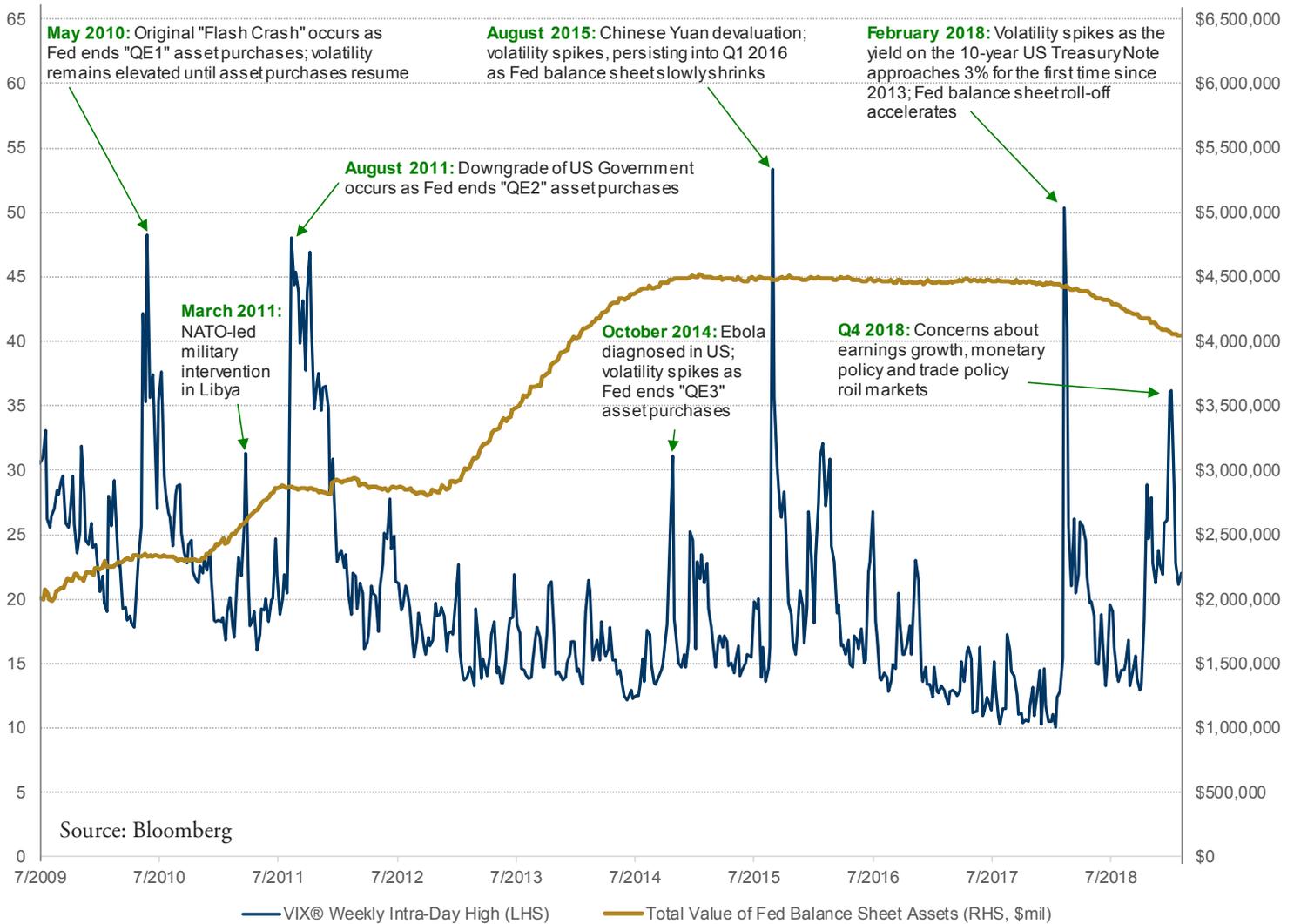


Implied volatility declined as the market recovered in January, but a key factor that contributed to volatility in Q4 2018 may return. As the following chart shows, it appears there has been a strong connection between implied volatility and the size of the US Federal Reserve's (the Fed) balance sheet.



Implied volatility has generally declined or remained below its long-term average of approximately 20 during periods of balance sheet growth through multiple quantitative easing asset purchase programs. Conversely, implied volatility has been relatively elevated during periods when balance sheet size plateaus or decreases. Furthermore, multiple volatility spikes have coincided with quantitative easing programs coming to an end. The implication of this connection is not that changes in the Fed's balance sheet cause changes in implied volatility, rather it appears the market has been more susceptible to elevated volatility in response to adverse events when the Fed has not been actively purchasing assets.

January's equity market recovery and subsequent decline in implied volatility were primarily spurred by stronger than expected corporate earnings and Fed rhetoric indicating a more dovish 'wait-and-see' approach to monetary policy normalization. In formal statements, the Fed indicated that balance sheet adjustments are a tool that remains available as it continues to navigate toward its dual mandate of price stability and full employment. After the January Fed meeting, a

meaningful amount of time was spent discussing balance sheet policy during the Q&A portion of the press conference. Fed Chairman Powell noted that interest rates will be the primary policy tool and that the specifics of balance sheet policy are being discussed and are an open item in front of the Federal Reserve Open Markets Committee.

In the meantime, the Fed's balance sheet will continue to shrink as US Treasury and mortgage-backed securities reach their maturity dates. It will be interesting to see if equity markets remain susceptible to bouts of volatility as the asset roll-off occurs. Likewise, should the details of balance sheet policy be announced, or actions taken to slow the rate of balance sheet reduction, it will be interesting to see if the market finds such moves to be calming or a worrying indication that significant economic deterioration may be imminent.

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