Anatomy of flash events

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Topics

- Defining a flash event
- The 2016 sterling flash event
- The 2019 yen flash event
- Other flash events
Flash events are usually driven *within* the microstructure

**Key features:**

1. Large, fast, price move (5 standard deviations or more) followed by illiquidity and/or divergent pricing across venues
2. Usually not driven by new fundamentals
3. Reverts to close to initial price level
# 2016 sterling flash event: what we learned

<table>
<thead>
<tr>
<th>BIS Report</th>
<th>Our Additional Comments</th>
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<tbody>
<tr>
<td><strong>1. Three phases:</strong> i) depreciation, ii) dysfunction, iii) recovery (in price and market functioning).</td>
<td>Depreciation lasted a long time (15 seconds). Many 1000s of trades can be executed in that timeframe.</td>
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<td><strong>2. Option markets</strong> appeared to play a key role.</td>
<td>Depreciation took the form of a very orderly market in which participants could see, react, and trade.</td>
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<td><strong>3. Flash events affect a broad range of electronic markets</strong> (equities, FX, bonds etc.)</td>
<td>The decline began on multiple venues almost at the same time (within microseconds of each other).</td>
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<td><strong>4. Data quality issues can become a driver of events in themselves.</strong> Lack of information prevents decisive decision-making.</td>
<td>Market Participants listening to ECNs that broadcast tick-by-tick data would have seen the move, even if not trading actively, and had time to take/exit positions.</td>
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Two hour view of GBP event

Price GBP/USD (left axis)
Volume on per 60 seconds (right axis)
Comparing the yen flash event to sterling flash event

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<tr>
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<th>USD/JPY</th>
<th>GBP/USD</th>
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<tbody>
<tr>
<td>Standard deviations</td>
<td>Approx. 5</td>
<td>&gt;50</td>
</tr>
<tr>
<td>Depreciation phase</td>
<td>6 minutes</td>
<td>15 seconds</td>
</tr>
<tr>
<td>Dysfunction phase</td>
<td>3 minutes</td>
<td>30 seconds</td>
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Sharp move: EUR/CHF February 10, 2019 22:06 GMT

Not large enough to be considered a flash event

- Start of week; thin market
- One “big figure” move
- Did not exhibit the dysfunction stage clearly
- Possibly a manual trader mistaking the “big figure”

- There are a material number of quotes that are one big figure off-market during the week
- They typically have minimal impact on market functioning
Flash events are usually driven within the microstructure.

We define a flash event as a five or more standard deviation move followed by dysfunction (illiquidity or divergence of prices across venues).

Typical to see three phases: depreciation, dysfunction, recovery.
Other flash events

- US Equities: 6-May-2010: 5% to 15% in ~15 mins (1% per minute)
- JPY: 17-Mar-2011: 4% peak in 4 mins (1% per minute)
- US Treasuries 24-Jun-2013 ("taper tantrum"): 0.5% deviations from underlying values
- US Treasuries: 15-Oct-2014: 0.37% on yields in 15 minutes (this has only happened twice before in 25 years)
- CHF: 15-Jan-2015: 41% peak move in 20 mins (2% per minute)
- EUR/USD: 18-Mar-2015: 2% in "minutes"
- US equity options: 24-Aug-2015: 5%+, developed overnight (night of 23 Aug)
- NZD: 24-Aug-2015: 10% in 2 mins (5% per minute)
- ZAR: 10-Jan-2016: 8% peak in 10 mins, (0.8% per minute)

- For comparison: GBP: 7-Oct-2016: 9% in 1 mins (9% per minute)