

Measuring market risk of structured products and derivatives: Intra-day price movements problem

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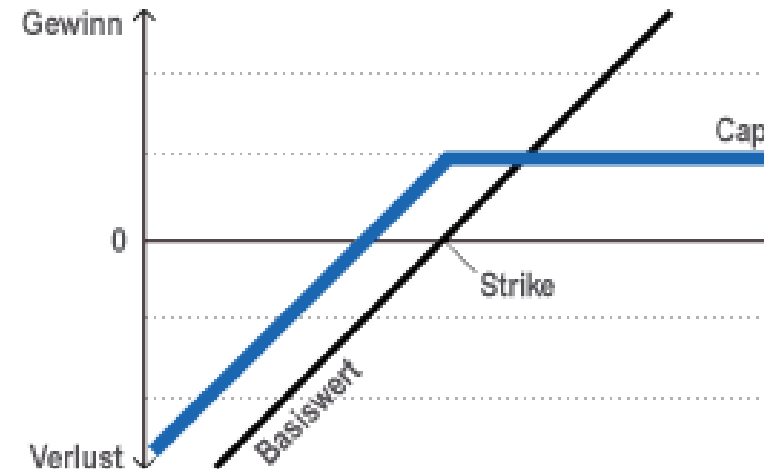
“Structural” market risks: Practical example

- On 6.2.2009 the share of bank Julius Baer fell during the day by 40% to CHF 19.74, but recovered later and closed at the end of the day at CHF 30.
- This intra-day event impacted many Barrier products on the Julius Baer stock



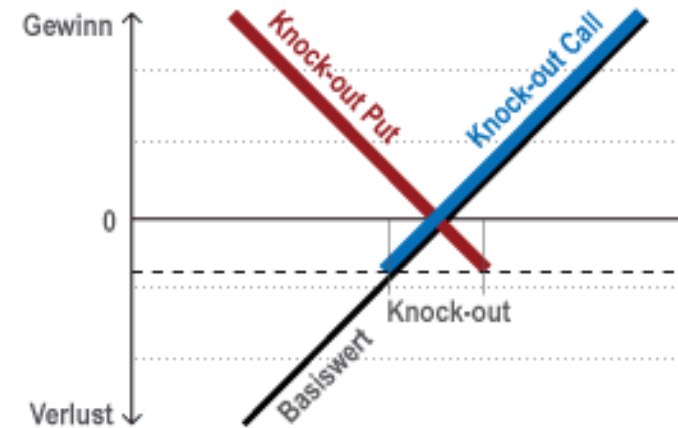
Example 1: Reverse Convertible

- 10.70% Defender VONTI, CH0048009895
- Underlying: Julius Baer share
- Expiration 20.11.2009
- Strike: CHF 42.42
- Barrier: CHF 21.21
- Impact of the intra-day event of 6.2.2009: If the closing price of the Julius Baer share at the expiration is lower than the strike, investors will receive a physical delivery of the Julius Baer shares (at the strike value)



Example 2: Knock-out Warrant

- Down and Out-Call-Warrant «SBAEC», CH0000332988
- Underlying: Julius Baer share
- Expiration 20.3.2009
- Strike/Barrier: CHF 26.-
- Impact of the intra-day event of 6.2.2009: The warrant expired immediately worthless despite the price of the Julius Baer share at the end of the day was above the barrier!



Issues

- For the purpose of the risk measurement of derivatives, the volatility of the underlying is frequently used as a proxy (e.g. for ex-ante TE and VaR)
- The measured historical daily volatility of the Julius Baer stock over the preceding 300 days was only $\approx 4\%$ (source: Bloomberg) → using this volatility as a proxy for ex-ante, with a probability of 99%, one could theoretically lose only max. $\approx 9.3\%$ on a one single day
- Intra-day movements are not accounted for → the risk is underestimated and the „structural“ risks (incl. those of the total loss!) are not measured
- Are typical risk management systems able to adequately handle such events?

Your feedback?