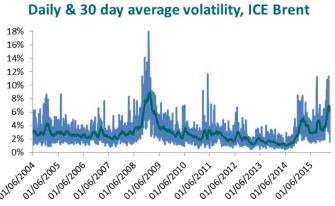


By most measures, volatility is at post-2009 highs





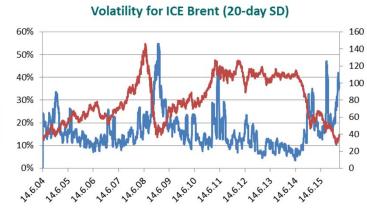


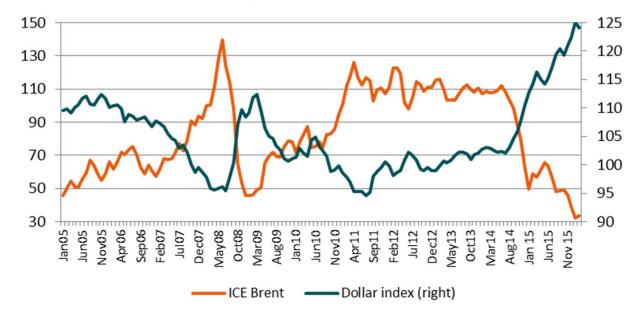
Figure 6. Crude oil implied volatility







Nominal \$ index v crude futures





Learn to live with elevated volatility



Geopolitical risk (not new, just elevated)



China hard landing?

Commodity exporter slowdown?



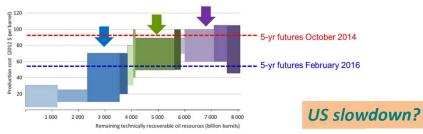
OPEC (Saudi) policy?

Shale's price response?



GREXIT / BREXIT?

Whither LRMC?

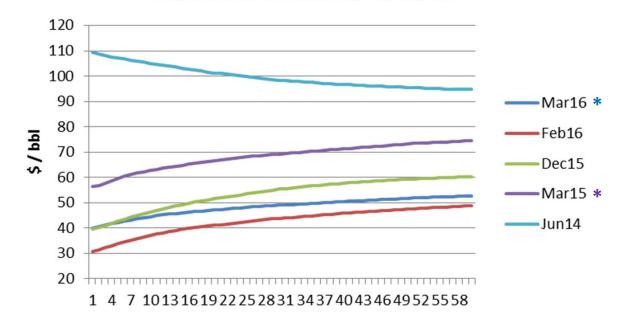




US Fed timing & EM impact?



ICE Brent 60 month futures



Some observations & questions



- Oil prices inherently volatile due to inelastic nature of supply & demand
- Historical & implied volatility is now at post-2009 highs & could persist
- 3 of last 4 episodes of elevated vol. associated with declining prices ('91, '08/9, 'late-14→ 2016)
- Research suggests increased financial participation in the oil market derives from volatility, not the other way round.
- How does volatility for exchange-traded commodities compare to that for commodities without broad/deep derivatives markets?
- US shale was expected to react quicker to prices, acting as volatility buffer, but productivity gains, hedging & (so far) robust financing → less reaction than expected
- Does volatility really matter?
 - a) at the front of the curve arguably, less so
 - b) at the back more so, as this can influence investment
- Countering volatility: physical mkt. participants need flexibility to fully hedge price risk
 if financial and physical liquidity not to be undermined (worsening volatility)
- A question of instruments, costs/margins & counterparties (banks)



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