Recent Events in Energy Markets

A Market View

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Context

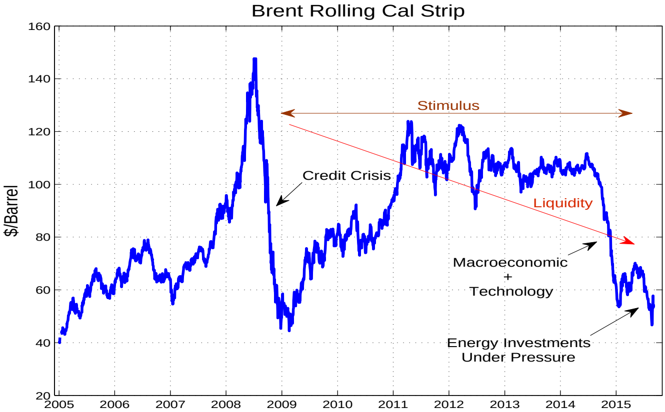
A lot happened in the last decade.

- Benchmark prices spanned a huge range.
- Credit crisis and aftermath — demand destruction and regulation.
- Unconventional production price impact — relative and absolute.
- Growing impact of renewables.
- Polar vortices.
- Regulatory-induced drop in liquidity.

Collectively these effect on project finance investment.

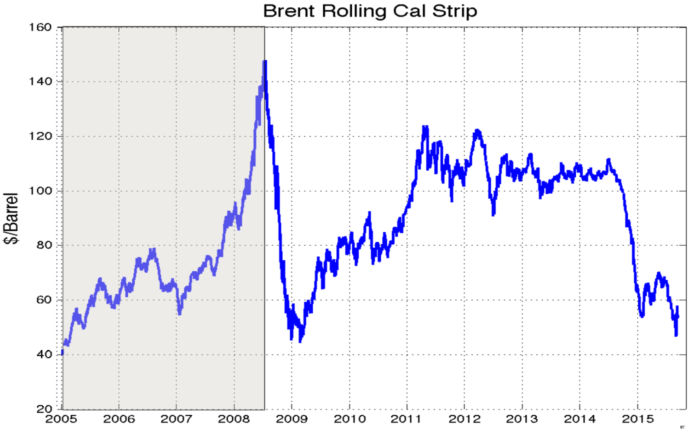
Retrospective

Viewed from the global energy benchmark.



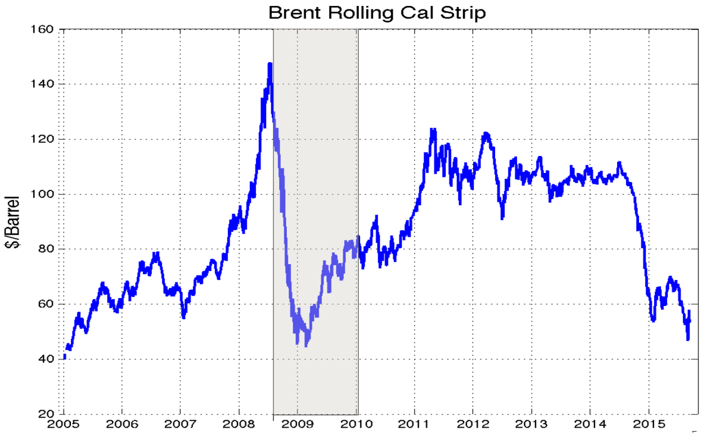
"Build Up"

- A lot of people rationalized this price increase — BRICS + decoupling.
- Trades occurred implying non-trivial probability of prices above \$200/bbl.



Credit Crisis and Initial Stimulus

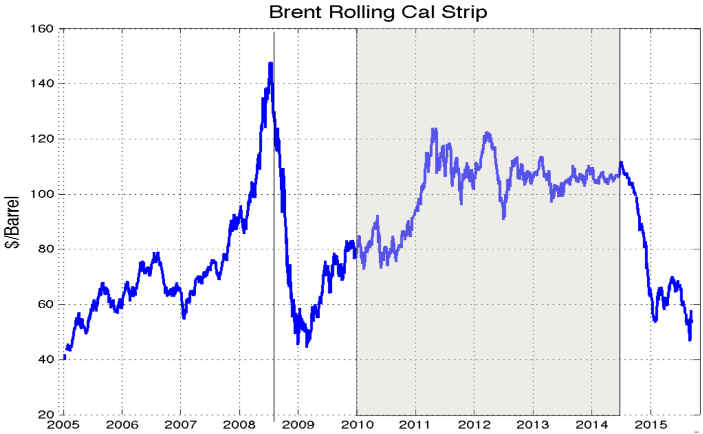
- High forward yields — tankers leased for storage.
- 2009 saw drops in consumption — even global electricity usage.



Retrospective

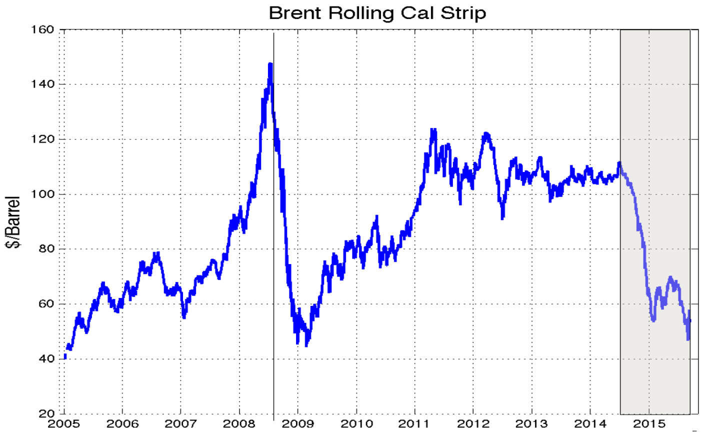
Stimulus Treadmill.

- Partial rebound in global energy prices.
- No appreciable change in global leverage — just shifted from household to government/corporate.



Price Collapse

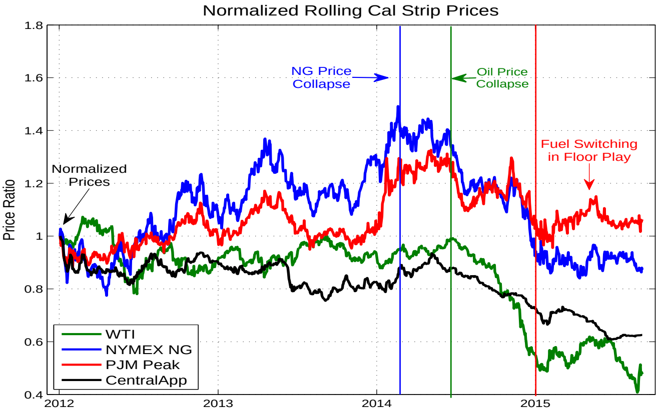
- Sudden collapse in prices.
- Substantial stress to producers.



More Recently

How have the benchmarks fared?

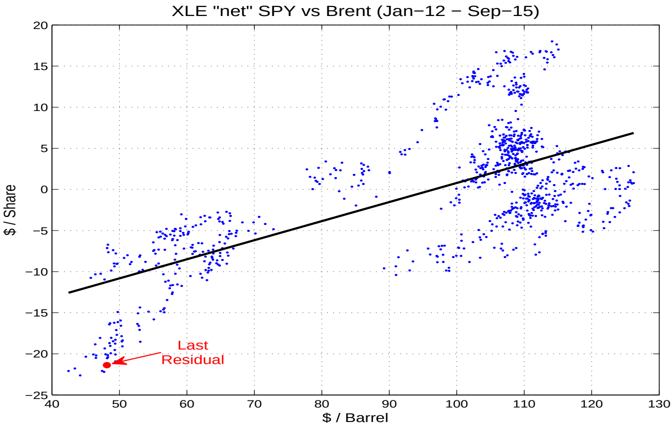
- Different phenomena in play — unconventional production.
- Electricity price drop buffered by generation stack.



More Recently

The price collapse has been punishing to the energy sector.

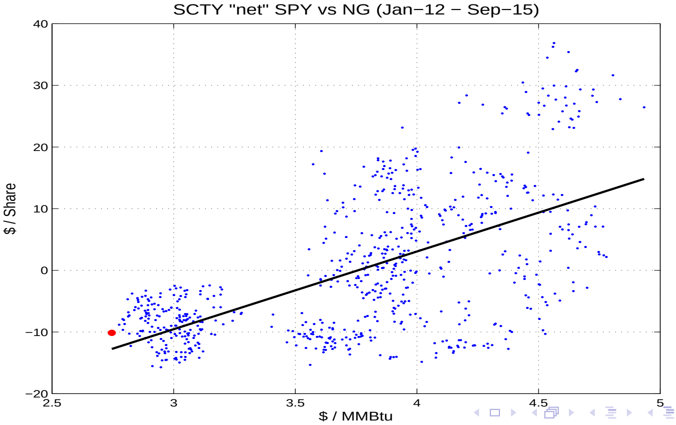
- XLE is a broad energy ETF.
- Stripping out SP500 as a market index yields the following response to Brent.



More Recently

Renewables have been severely impacted.

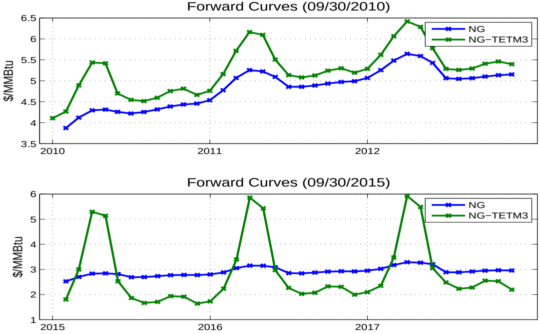
- SCTY (Solar City) versus rolling calendar NG strip.
- Stripping out SP500 as a market index yields the following response.



More Recently

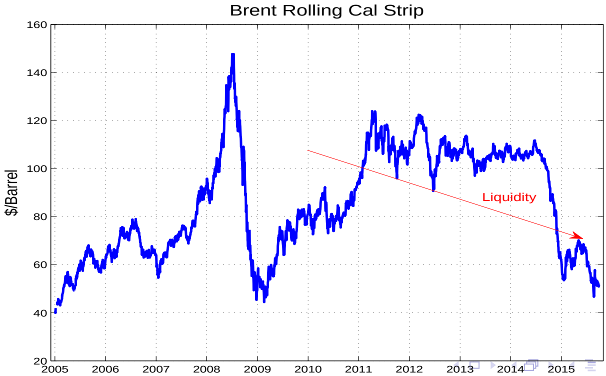
Locational price spreads have been turned upside down.

- TETCO M3 is a Northeast U.S. gas hub.
- From 2010 to 2015:
  - Substantial price drop.
  - Price inversion.
- TETM3 is now discount to Henry Hub, Louisiana (NYMEX) for most months.



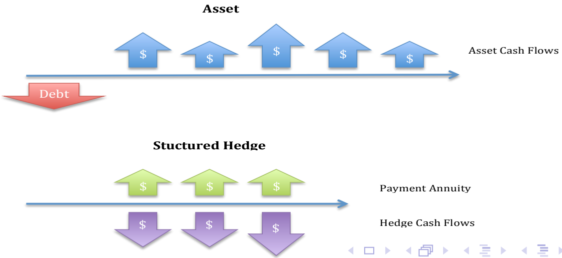
Liquidity

- Key benchmark liquidity has ostensibly improved:
  - Open interest in WTI and Brent has generally increased over this period.
- Functional liquidity has dropped — dealer exodus.
  - It is much harder to hedge price risk where you are building an asset.



Financing and Hedging

- The Project:
  - Borrows money to build an asset.
  - Asset will generate random cash flows.
  - Structured hedge "annuitizes" the cash flows for a period of time.
- If you can't get a hedge "near" your asset, the project and its lenders are exposed to unwanted and undesirable price and asset performance risk.
- Rigorous hedge quality ratings analysis is more important than ever.



A cautionary comment on predictions.

- Forward curves: the price you can trade *now* for delivery *then*.
  - Set by market forces.
  - Driven in large part by cost of storage.
  - Forecast performance is underwhelming.