



NOVA SCHOOL OF
BUSINESS & ECONOMICS

Hedge Funds

Investment Strategy – Commodities

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Commodities Arbitrage

Commodities Market

Reuters (Refinitiv) Commodity Index

- Commodities are part of a large universe with lots of specificities within each sub-class
- CRY has 6 sub-groups: Energy, Grains, Industrials, Livestock, Precious Metals, Soft



Commodities Arbitrage

Commodities Market

Goldman Sachs Commodity Index

- Even the indexes are different and show different performance metrics
- GSCI has 5 sub-groups: Agriculture, Energy, Industrials, Livestock, Precious Metals



Commodities Arbitrage

Fundamentals

- **Fundamentals very specific to each commodity and sometimes quite complex**
 - production costs (ex. Oil - how much? cheapest x marginal producer?)
 - warehousing costs (how much? where? tanks x tankers)
 - transportation costs (may use as factor ex. FFA1 Midland-WTI = Crude - Shale)
 - stock levels (location, similarities / dif. grades)
 - new technologies / new infrastructures
 - weather (expected / seasonality x unexpected)
 - demand / consumption trends
 - world growth (demand, exporters x importers)
 - legal restrictions / government agencies, etc..
 - Benchmark to some historic “fair” value
- There are specialists in each commodity (which we are not!!) and some very sophisticated systems (ex. satellite images, sensors, etc)

Commodities Arbitrage

Common Factors

- **But still some common factors that we may use to built trading models:**
 - quoted in USD (inverse correlation with USD)
 - seasonality (weather, production, consumption)
 - trends (economy, fashions, lag time to adjust production)
 - volatility (squeezes - weather)
 - curve slope (contango x backwardation)
 - market segmentation (investors x producers)

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Futures Curve Slope

Contango vs Backwardation

- **Price Curve Slope: Contango x Backwardation**
 - **Contango = normal upward slope**
 - Explained by warehousing costs, funding, insurance, depreciation, etc
 - **Backwardation = inverted / downward slope**
 - Explained by short term shortage and/or expected future surplus
 - Steep contango may be arbitrated (with limits...), backwardation may not

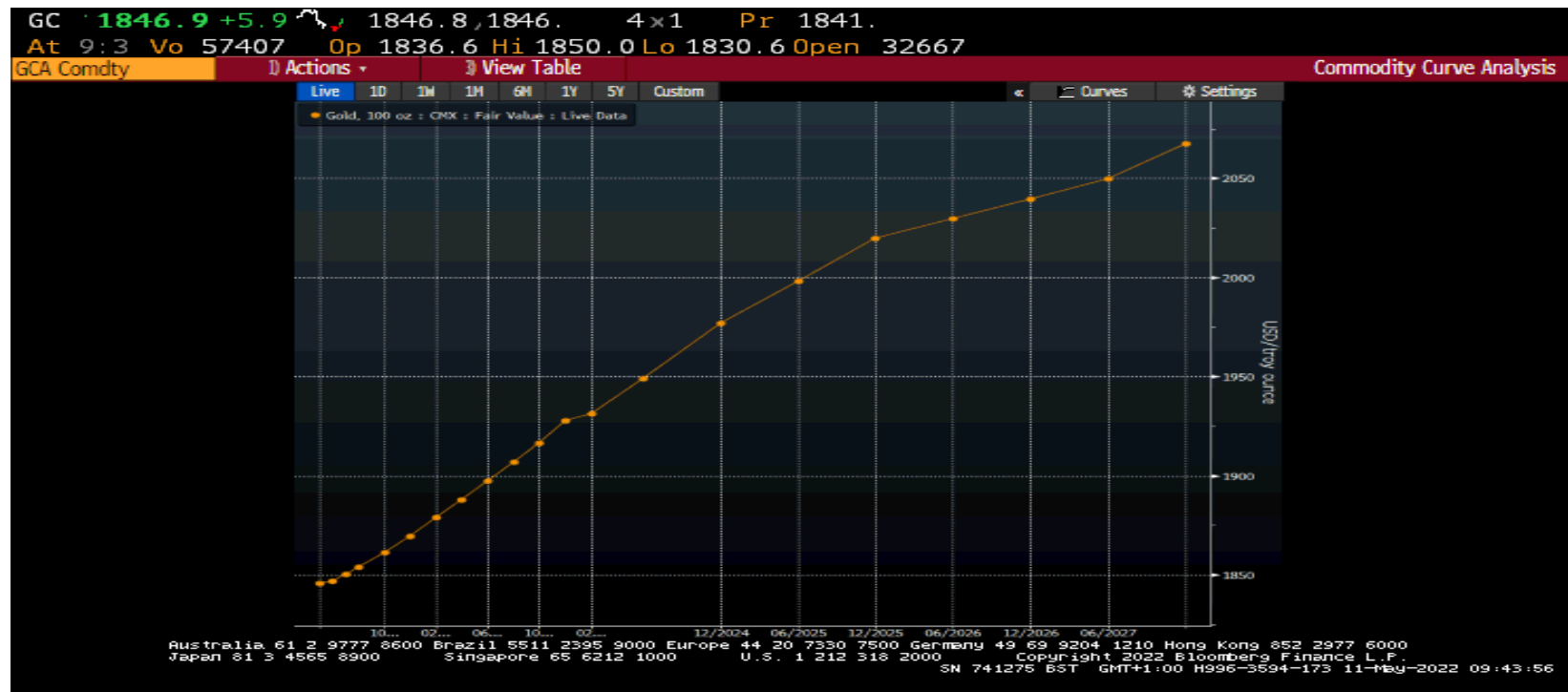
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Curve Slope

Examples

Gold Curve

- Price Curve in **Contango** – if curve too steep it is possible to arbitrage (buy and store)



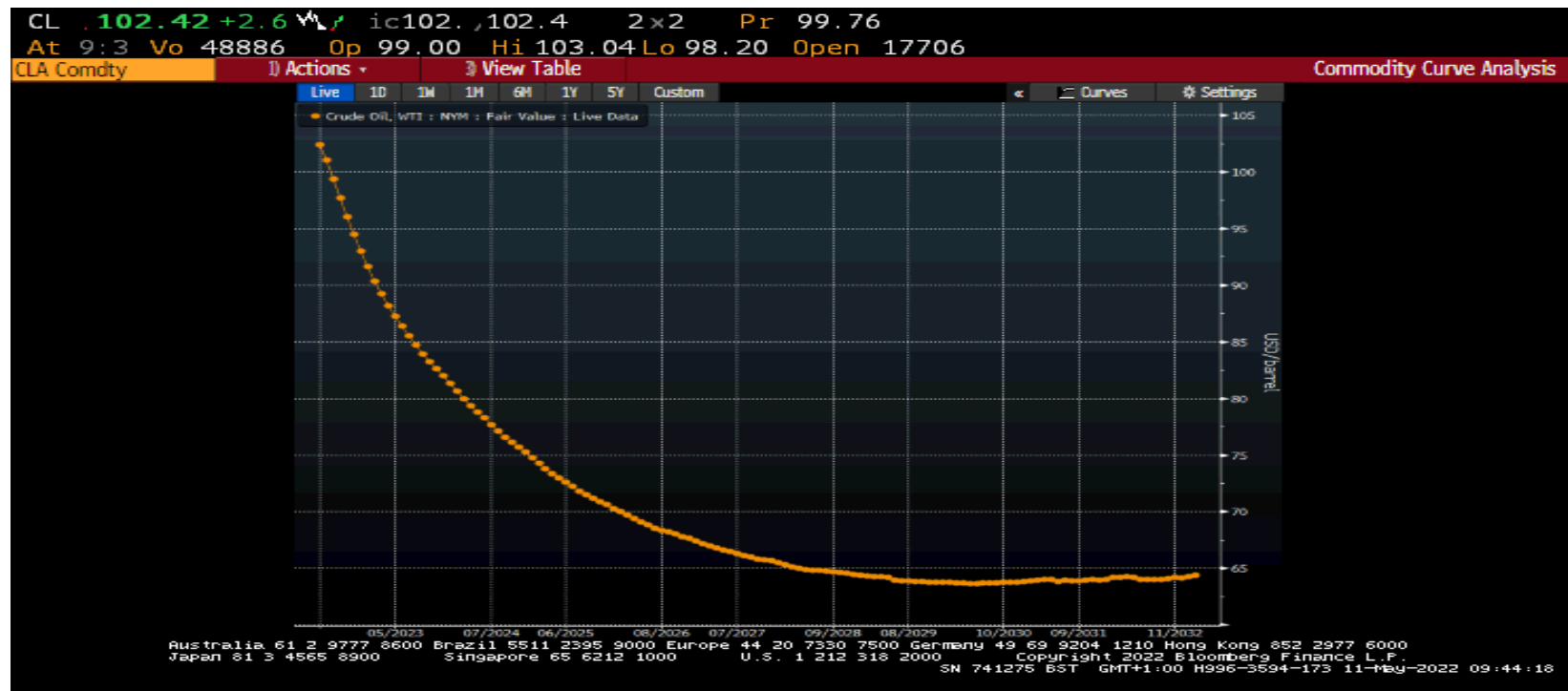
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Curve Slope

Examples

Crude Oil (WTI) Curve

- Price Curve in **Backwardation** – not easy to arbitrage (cannot short physical commodity)



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Investment Strategies

- **Some usual strategies** with commodities:
 - Statistical Arbitrage – correlated commodities or stocks (see ex.)
 - Momentum strategies – see UBS Comm-pass
 - Seasonality – see GS Alpha
 - Curve slope Arb – see CYD Research
 - **CYD TR (Total Return)**
 - **sell 1st month** as it decays faster towards delivery
 - **buy 2nd month** as a hedge
 - **CYD LS (Long-Short)**
 - **buy Backwardation ($1y/1m < 1$)**, positive roll / carry gain
 - **sell Contango ($1y/1m > 1$)**, negative roll / carry loss

Ex: CYD TR (front month roll), CYD LS (carry), comm TFMRSEASON

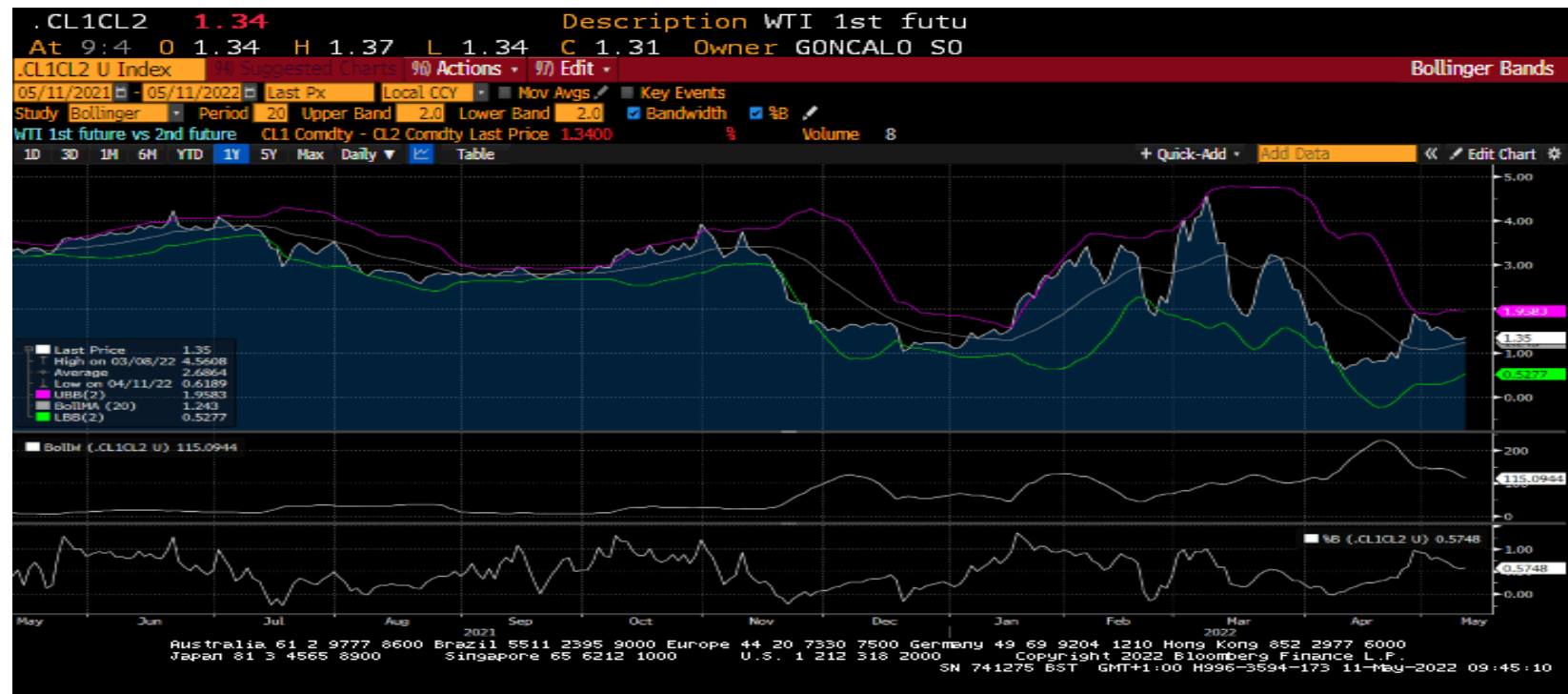
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Statistical Arbitrage

Example 1

Crude Oil (WTI) Curve

- **Strategy:** trade same commodity along the curve. Spread between 1st future and 2nd future price in WTI using Bollinger Bands to generate signals



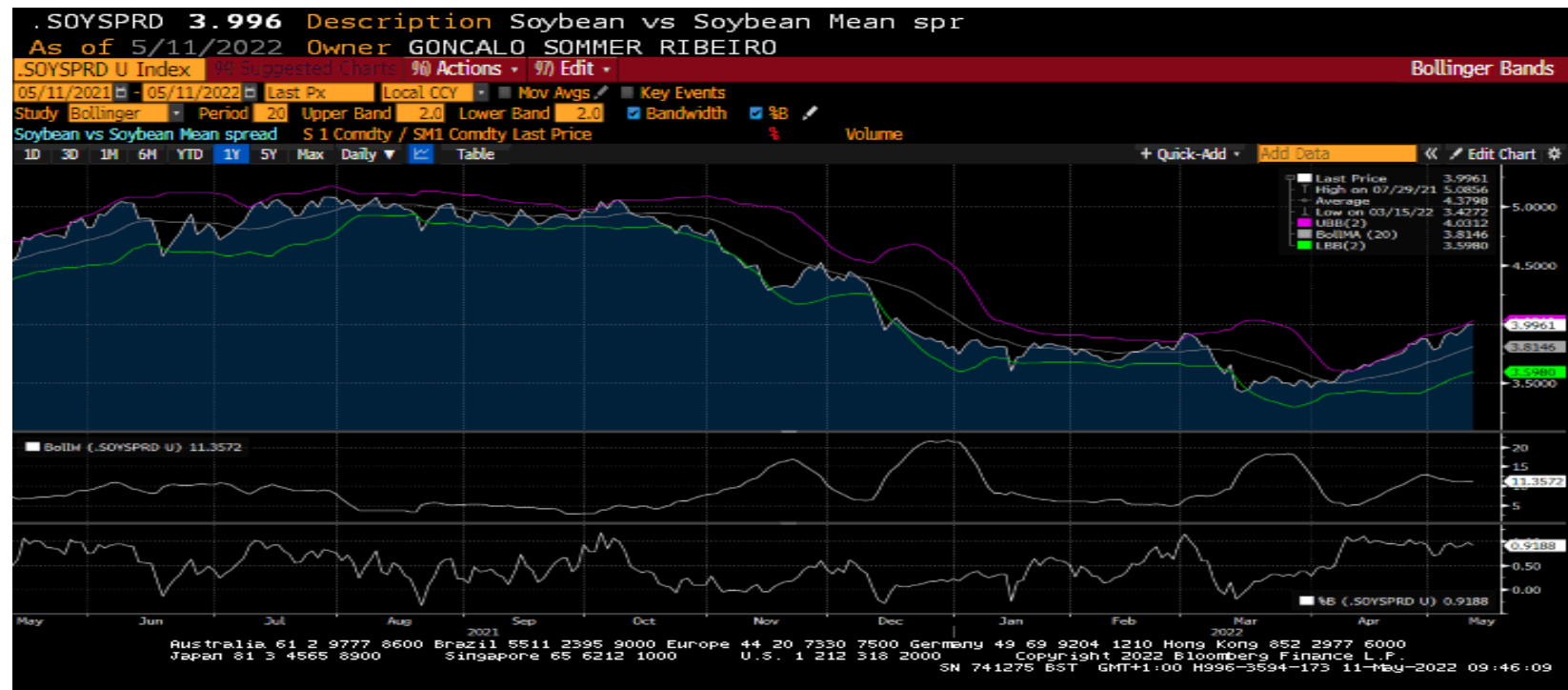
Commodities Arbitrage

Statistical Arbitrage

Example 2

Soybean vs Soybean Meal Spread

- **Strategy:** trade related commodities (CL+CO, C+W, SM+S). Spread between related commodity prices to generate signals



Commodities Arbitrage

Statistical Arbitrage

Example 3

Gold vs Gold Producers

- **Strategy:** trade commodities *vs* related stocks, such as producers (CL+Xom, GC+Barrick). Spread between related commodity prices and their producers

