Welcome to our 2022 Recap:

We are pleased to welcome you to our 2022 Year End Report.

2022 was a year of wild swings. There was a lot of bluster. There were some markets where this created price instability. In other markets the perceived levels of uncertainty as measured by option prices exploded. Both occurred in some markets.

The interest rate picture was an example where futures prices moved and implied volatility was not far behind. After a multi decade Goldilocks world of rates being "just right" the situation changed dramatically. With an inflation picture that began to deteriorate, the Fed hiked some lending rates. The prospect of multi-decade high inflation moved nominal rates higher and implied vols up to stratospheric levels (at least for "risk-free" assets). Given the high rates of realized inflation, the market seems to still believe this is an aberration, not a new normal. The incredibly large balance sheet of the Fed suggests that the new normal cannot be so benign. On the one hand the balance sheet could be maintained indefinitely, but this would translate into a large and non-sterilized injection into the banking system. This is hardly the stuff that quells inflation. On the other hand the Federal Government borrows heavily at the front end of the curve. A Fed which raises rates and restricts new credit (and does not itself purchase bonds) will cause the government's borrow cost to explode. Inflation is a friend of the borrower. We believe that higher inflation is here to stay and the Fed's machinations are focussed on optics. The government needs rates which are behind the inflation curve. The markets don't want to ponder the credit punch bowl being taken away.

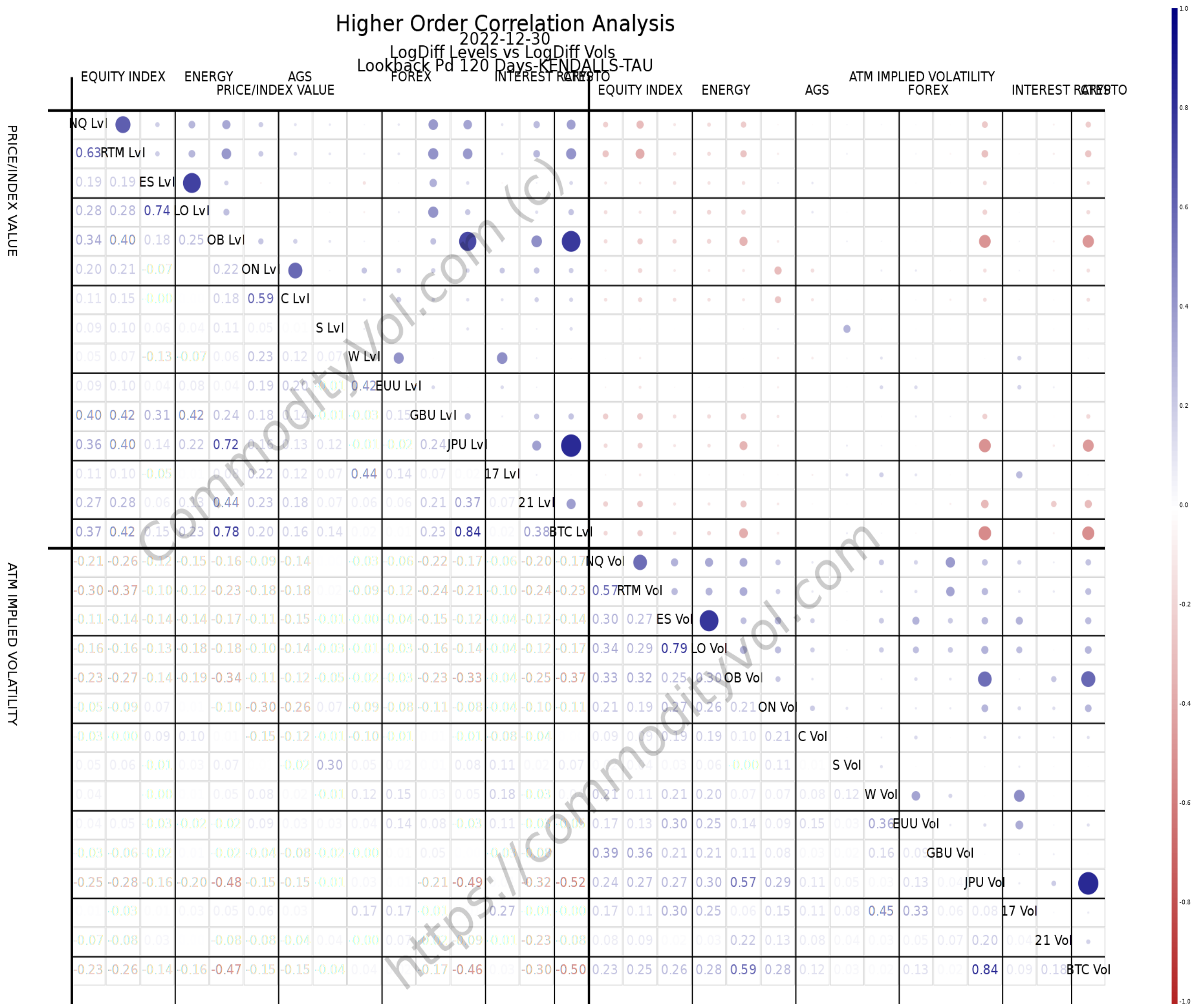
A whole class/generation of equity investor was introduced to a concept they vaguely understood-the Bear Market. Major equity index futures were down anywhere from 9% to 33%. The Dow30 was down least. The Nasdaq100 was down the most. Problems with the FAANGS, Tesla and other tech names torpedoed the prospects of this index. Discounted cash flow models posit a negative correlation between rates and equity prices. For the average public company, rates (though higher) are still very mild. If inflation is running north of 7% and the real rate assumed to be in the 2.5 to 3.5% range, then a textbook application of Fisher's equation would indicate nominal rates of about 10% (risk free). Most large companies are able to borrow for much lower rates. If we look at the Treasury's HQM Yield Curve, we see no tenors yielding more than 5.5% suggesting that rates are still very pro-borrowers. Yes, the DCF is correct to discount corporate earnings a bit more, but it doesn't look like there is any reason for them to curtail capex for rate reasons. They are borrowing incredibly cheaply. The weakness in markets is probably due to concerns around the health of the consumer. It is still too early to gauge the depth of that malaise.

Energy generated more heat than light this year. Yes, most energy prices are higher now than they were at the beginning of the year. However, most of the prices are off their highs. With the exception of an early cold snap in the Europe and US, the weather has been very mild. The most derided and disliked commodity, coal, has staged a remarkable comeback with prices rocketing up nearly 100%. The critical months in energy are still ahead of us. The length of winter plays a critical roll in setting the stage for storage and consumption in the summer. There are still many months to go.

The Dollar showed remarkable strength against all but the Mexican and Brazilian currencies. If Europe's energy needs are fixed by importing US hydrocarbons, it stands to reason that the Dollar will have further room to rally. The demand for energy and the need to make European goods competitive on the World stage would suggest more declines are in store for the European currencies against the Dollar.

Ags ended up higher on the year, but somewhat off their worst case highs. The same can be said of vols.

Next we look at cross asset correlations over the last 120 days. In this case we look at a robust correlation measure called Kendall's Tau. Overall, there is not much correlation across asset classes. In the case of futures, we see high correlation between Nasdaq and Russell. This does not make sense except in sense of speculative investing getting punished in both markets. There is a rather strong correlation between SP500 and the oil future. A strong world economy will benefit both the SP500 and oil. There is a very strong correlation between refined gasoline (OB), the Japanese Yen and Bitcoin. The connection is not clear. The correlations are similar on the vol-vol side. Finally, there is significant cross correlation between the futures of JPY, Bitcoin and OB and their vols. All of this is suggesting these connections are not abberations.


Higher Order Correlation Analysis
2022-12-30
LogDiff Levels vs LogDiff Vols
Lookback Pd 120 Days-KENDALLS-TAU
PRICE/INDEX VALUE
EQUITY INDEX
ENERGY
AGS
FOREX
INTEREST RATES
CRYPTO
ATM IMPLIED VOLATILITY
NQ Lvl
RTM Lvl
ES Lvl
LO Lvl
OB Lvl
ON Lvl
C Lvl
S Lvl
W Lvl
EUU Lvl
GBU Lvl
JPU Lvl
17 Lvl
21 Lvl
BTC Lvl
NQ Vol
RTM Vol
ES Vol
LO Vol
OB Vol
ON Vol
C Vol
S Vol
W Vol
EUU Vol
GBU Vol
JPU Vol
17 Vol
21 Vol
BTC Vol
https://commodityvol.com (c)

As in previous letters, we now comment on the action in different market segments.

Interest rate futures were down across the board for the year. The Ultrabond futures faded the most, with Eurodollars the least. Vol was up across the board for this asset class, but the changes were inverse to duration. The short end of the curve suffered, or gained, most from the uncertainty. The market is very much focussed on the near term. The belief is that this is a rough patch in an otherwise calm sea. We are skeptical.
Interest Rates ATM
30 Year Bond Detail
10 Year Note Detail
Ultrabond

Equity markets were down. This is perhaps the stickiest down market in a long time and certainly the first bad market for a lot of investors. The most interesting observation is that the VIX index is up 5%, while the SP500 ATM vol is up more than 7 vol points. This is a bit odd. There should be a little more correspondence in the VIX and the ATM implied vol levels of the index. Perhaps there is an amelioration in the wings, or the second month's vols are persistently lower. If we look at the skew plot from the SP500 detail page, we see that only the extreme puts are cheaper. Everything else is higher at the end of the year. It does look like the SP vol term structure has flattened. That might be the explanation for this.
EquityIndex ATM
SP500 Detail
VIX Detail

Domestic coal rocketed up. It was the biggest winner in the energy patch. Vol also exploded for coal. The vol of vol in coal is exceedingly high. The next up is Diesel/ULSD/Heating Oil. The futures were up nearly 40% with vol also up significantly. Natural gas was up 17% which seems healthy, but is in fact way off its highs. Vol was up 24 vol points and has been persistently in the low 100s. There is a lot riding on the weather and the re-establishment of the LNG trains to Europe (and European weather as well). Brent and WTI were up 8.8% and 5.5%, respectively. The effects of price caps and OPEC+ cutbacks are not yet known. Vol is up on the year but has been mostly in a tight range.
Energy ATM
WTI Crude Detail
Brend Crude Detail
US Natty Gas Detail
Details Energy

The US Dollar has been incredibly strong for most of the year. Starting with the elephant in the room, BTC collapsed this year by about 63%. Ethereum futures, which were listed this year, collapsed as well. The most concerning aspect of this collapse is that vol has come out of the options. The vol leaving a collapsing market signals to us some degree of permanence. Against the Euro, Pound, and Yen, the Dollar showed a great deal of strength. From the view of Purchasing Power Parity theory in trade, we are confident that this move is permanent (at least to the extent sanctions against Russia are permanent). The high cost of energy in Europe will be compensated by a rapidly strengthening Dollar until a new equilibrium is reached-one influenced heavily by relative costs of production. Vol is up in all of these currencies. The Dollar did weaken against the Real and the Peso.

Foreign Exchange ATM
Yen Detail
Euro Detail
Bitcoin Detail
Ethereum Detail

With the exception of Oats, the Agricultural sector was up across the board. In almost every case, both vols and prices were off their best levels of the year. Even though there was some retracement, many of the grains and seeds were up more than 10%. Except in a handful of cases, (like Wheat, up 22%) vol was down. This is an interesting twist in the CPI and inflation debate, as most analysts have been concerned with energy. A prolonged increase in agricultural commodities might have a clear effect on consumers since the cost increases are more readily observed by consumers.
Ags ATM
Wheat Detail
Kansas City Wheat Detail
Live Cattle Detail
Ags Details

Metals have been an enigma this year. Copper is down significantly. Silver and Platinum are up. Perhaps the COVID related slowdowns in the Chinese economy has caused this slowdown in copper. The rather weak rally in silver and gold is hard to understand. Perhaps the market is convinced that Fed action will tame inflation at potentially the cost of lower output. In any event vol is nicely bid across the board.
Metals ATM
Gold Detail
Copper Detail

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info@commodityvol.com

At The Money Roundup of Products

InterestRates

exch/prod	desc	futures chng [%]	vol chng [%]
CBT/26	2 YR US Treasury Note	-6.438 [-5.9%]	+0.010 [+68.7%]
CBT/25	5 YR US Treasury Note	-12.508 [-10.4%]	+0.019 [+55.9%]
CBT/21	10 YR US Treasury Note	-17.141 [-13.2%]	+0.025 [+47.8%]
CBT/17	30 YR US Treasury Bond	-32.563 [-20.6%]	+0.040 [+40.4%]
CME/ED	Eurodollar	-4.720 [-4.7%]	+0.005 [+142.9%]
CBT/UBE	Long Term US Treasury Bond	-57.938 [-30.1%]	+0.049 [+30.4%]

EquityIndex

exch/prod	desc	futures chng [%]	vol chng [%]
CBT/YM	E-Mini Dow	-3170.000 [-8.7%]	+0.044 [+29.6%]
CME/NQ	E-Mini Nasdaq	-5463.250 [-33.1%]	+0.076 [+37.6%]
CME/RTO	E-Mini Russell 2000	-498.500 [-22.0%]	+0.049 [+23.4%]
CME/RTM	E-Mini Russell EOM	-498.500 [-22.0%]	+0.046 [+24.1%]
CME/ES	E-Mini S&P 500	-925.000 [-19.3%]	+0.071 [+47.9%]
CBOE/VIX	VIX Volatility Index	+5.070 [+30.5%]	-0.093 [-12.5%]

Energy

exch/prod	desc	futures chng [%]	vol chng [%]
NYMEX/BZO	Brent Crude Oil Margin	+6.930 [+8.8%]	+0.056 [+16.0%]
NYMEX/BE	Brent Euro Style	+7.790 [+10.0%]	-0.099 [-19.6%]
NYMEX/CVR	Chicago Ethanol(platts) Average Price	-0.087 [-3.8%]	-0.277 [-97.3%]
NYMEX/MTO	Coal Api2 Cif Ara Argsmccloskey	+108.900 [+91.5%]	+2.414 [+781.0%]
NYMEX/LO	Crude Oil	+4.180 [+5.5%]	+0.038 [+10.5%]
NYMEX/LN	European Natural Gas	+0.660 [+17.3%]	+0.244 [+38.5%]
NYMEX/E7	Henry Hub Financial Last Day	+0.660 [+17.3%]	+0.245 [+38.8%]
NYMEX/JKO	LNG Japan/korea Marker (platts) Average Price	-0.990 [-3.2%]	-0.090 [-11.9%]
NYMEX/ON	Natural Gas	+0.660 [+17.3%]	+0.243 [+38.4%]
NYMEX/OH	NY Harbor ULSD	+0.938 [+39.8%]	+0.170 [+49.7%]
NYMEX/OB	RBOB	+0.222 [+9.8%]	+0.062 [+16.2%]

Forex

exch/prod	desc	futures chng [%]	vol chng [%]
CME/ADU	AUDUSD 2pmfix	-0.036 [-5.1%]	+0.034 [+38.2%]
CME/BTC	Bitcoin	-29330.000 [-63.9%]	-0.154 [-25.4%]
CME/BR	BRLUSD Monthly	+0.011 [+6.2%]	+0.030 [+19.3%]
CME/CAU	CADUSD 2pmfix	-0.045 [-5.8%]	-0.003 [-3.7%]
CME/CHU	CHFUSD 2pmfix	-0.001 [-0.1%]	+0.010 [+14.1%]
CME/ETH	Ethereum Futures	-395.500 [-25.0%]	-0.822 [-60.6%]
CME/EUU	EURUSD 2pmfix	-0.056 [-4.9%]	+0.019 [+26.8%]
CME/GBU	GBPUSD 2pmfix	-0.140 [-10.4%]	+0.032 [+46.2%]
CME/JPU	JPYUSD 2pmfix	-0.001 [-11.2%]	+0.081 [+134.1%]
CME/MP	Mexican Peso	+0.002 [+5.2%]	-0.043 [-32.1%]
CME/NE	New Zealand	-0.044 [-6.5%]	+0.039 [+41.9%]

Ags

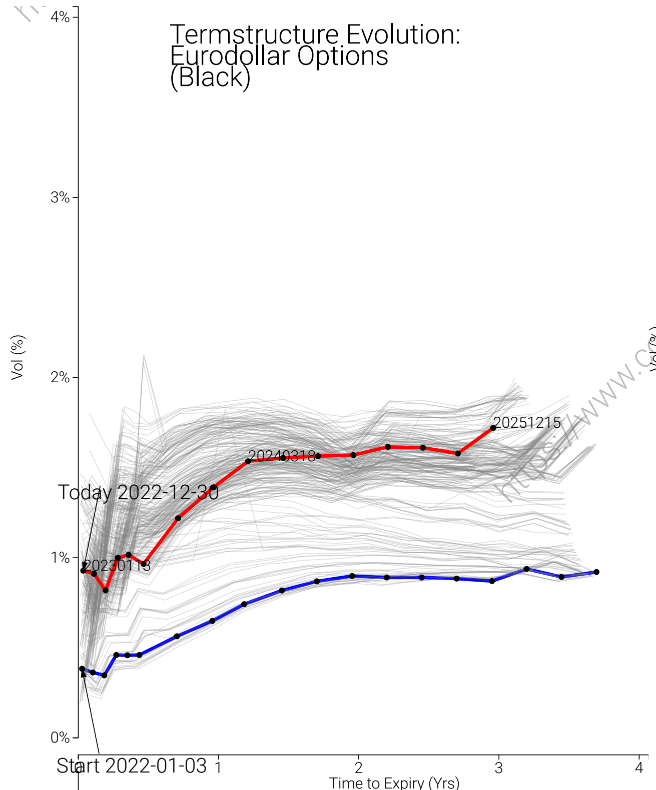
exch/prod	desc	futures chng [%]	vol chng [%]
CME/DK	Class IV Milk	+0.720 [+3.3%]	-0.138 [-82.7%]
CBT/C	Corn	+0.893 [+15.1%]	-0.068 [-27.5%]
CME/62	Feeder Cattle	+17.450 [+10.5%]	-0.017 [-16.4%]
CBT/KW	KC HRW Wheat	+0.965 [+12.2%]	+0.016 [+5.9%]
CME/LN	Lean Hog	+6.575 [+8.1%]	+0.001 [+0.6%]
CME/48	Live Cattle	+18.975 [+13.7%]	-0.060 [-40.2%]
CME/NF	Nonfat Dry Milk	-13.775 [-8.7%]	-0.048 [-61.4%]
CBT/O	Oats	-3.135 [-46.1%]	+0.045 [+11.5%]
CBT/14	Rough Rice	+3.755 [+25.7%]	+0.008 [+5.5%]
CBT/S	Soybean	+1.685 [+12.4%]	-0.014 [-6.8%]
CBT/06	Soybean Meal	+59.700 [+14.5%]	-0.036 [-11.6%]
CBT/07	Soybean Oil	+7.650 [+13.6%]	-0.054 [-15.5%]
CBT/W	Wheat	+0.340 [+4.5%]	+0.057 [+22.7%]

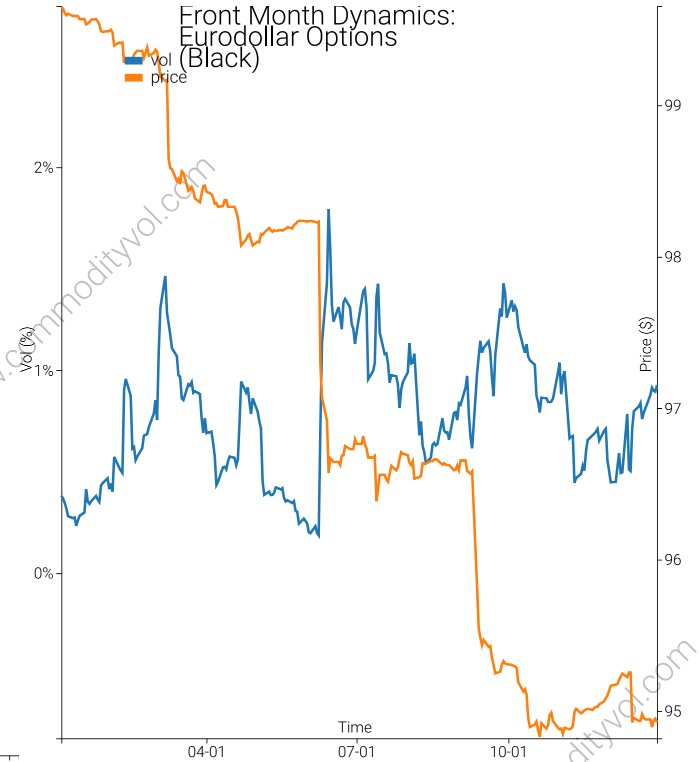
Metals

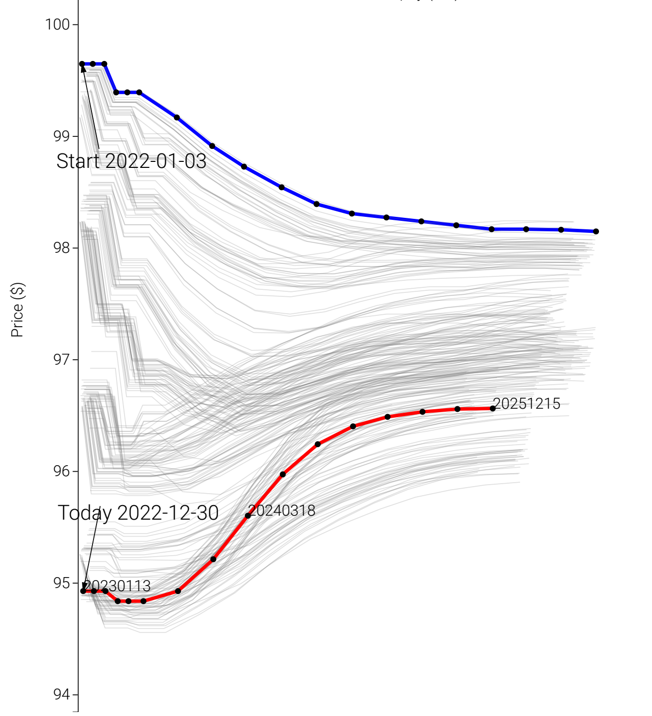
exch/prod	desc	futures chng [%]	vol chng [%]
COMEX/HX	Copper	-0.611 [-13.8%]	+0.036 [+14.6%]
COMEX/OG	Gold	+26.100 [+1.4%]	+0.014 [+10.8%]
NYMEX/PAO	Palladium	-28.000 [-1.5%]	+0.041 [+9.4%]
NYMEX/PO	Platinum	+128.900 [+13.5%]	+0.029 [+10.4%]
COMEX/SO	Silver	+1.230 [+5.4%]	+0.060 [+25.1%]

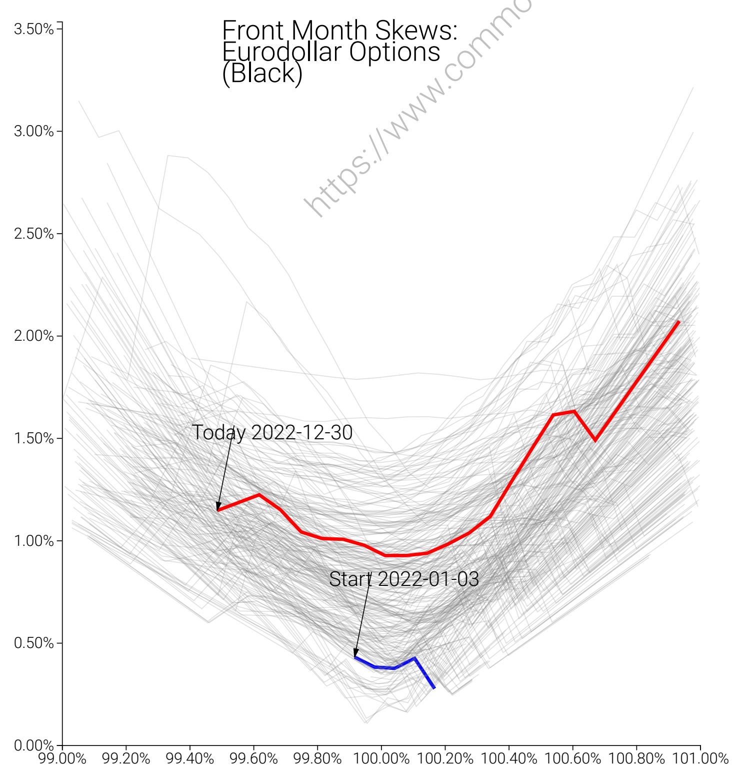
Skews, Termstructures and more

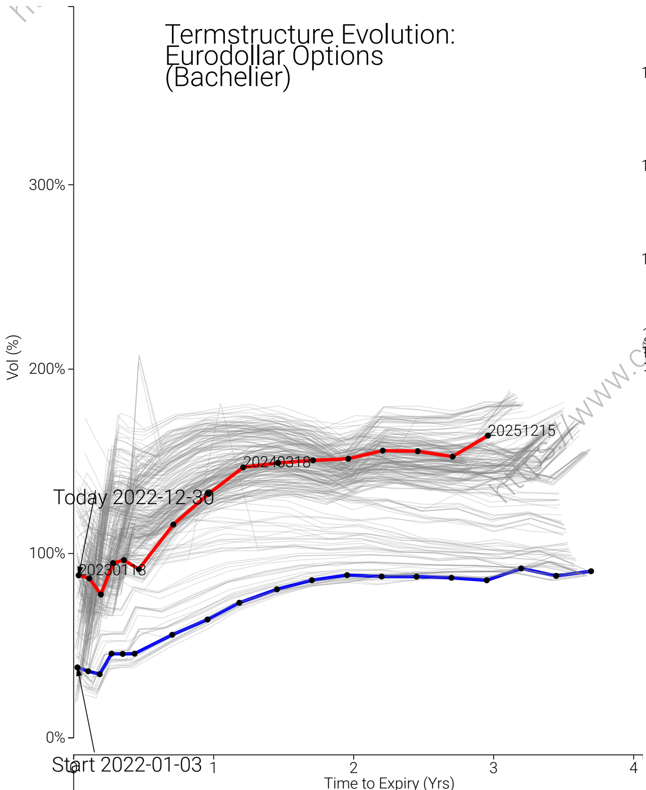
InterestRates: Fixed Income and STIRS

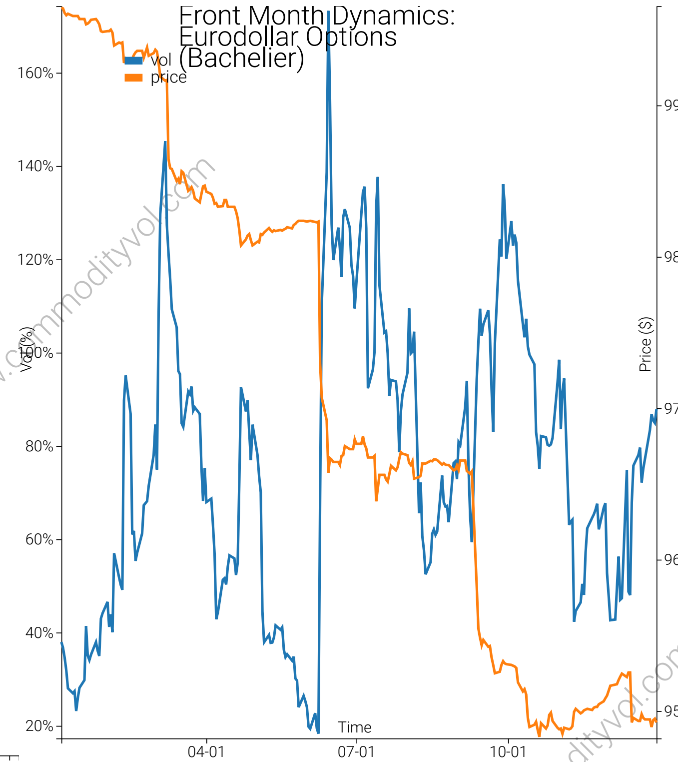

Termstructure Evolution:
Eurodollar Options
(Black)
Vol (%)
4%
3%
2%
1%
0%
Today 2022-12-30
20230113
20240318
20251215
Start 2022-01-03
1
2
3
4
Time to Expiry (Yrs)

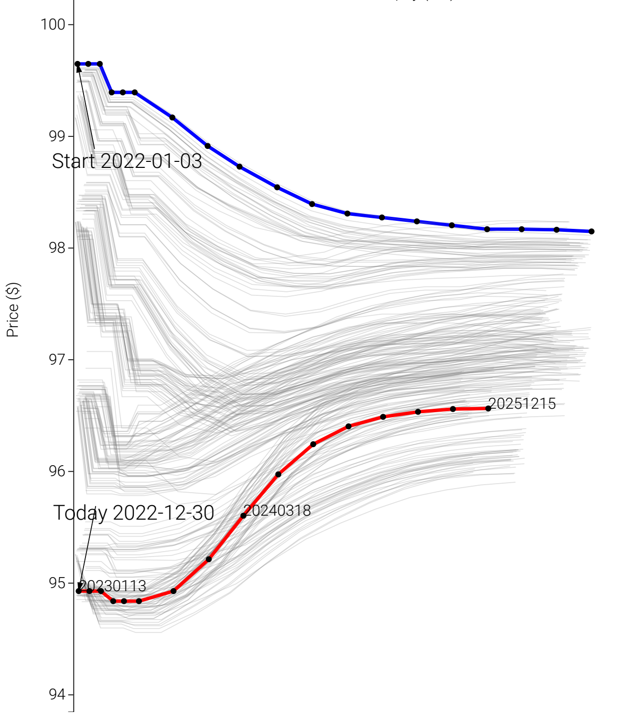

Front Month Dynamics:
Eurodollar Options
(Black)
vol
price
Vol (%)
2%
1%
0%
Price ($)
99
98
97
96
95
Time
04-01
07-01
10-01

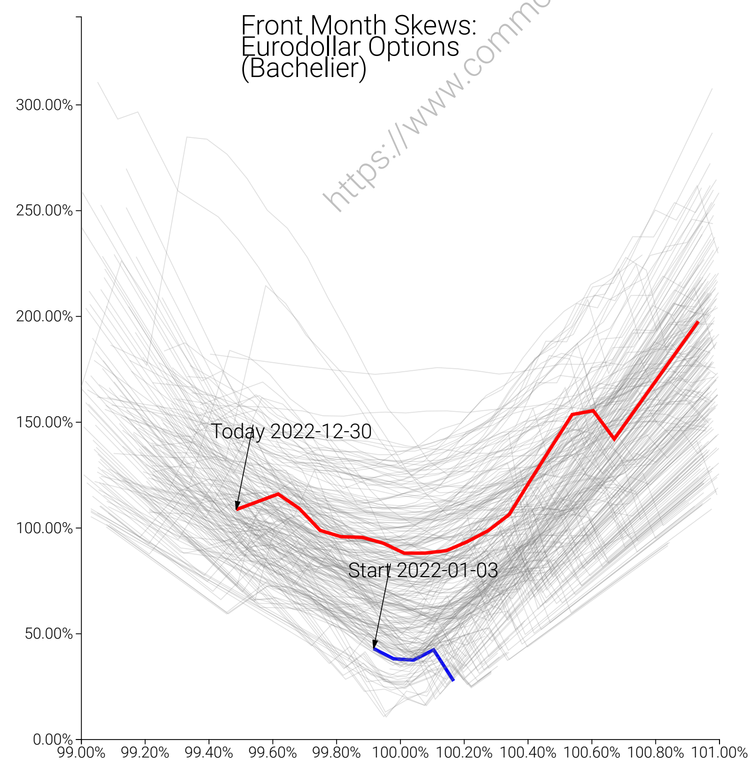

Price ($)
100
99
98
97
96
95
94
Start 2022-01-03
Today 2022-12-30
20230113
20240318
20251215

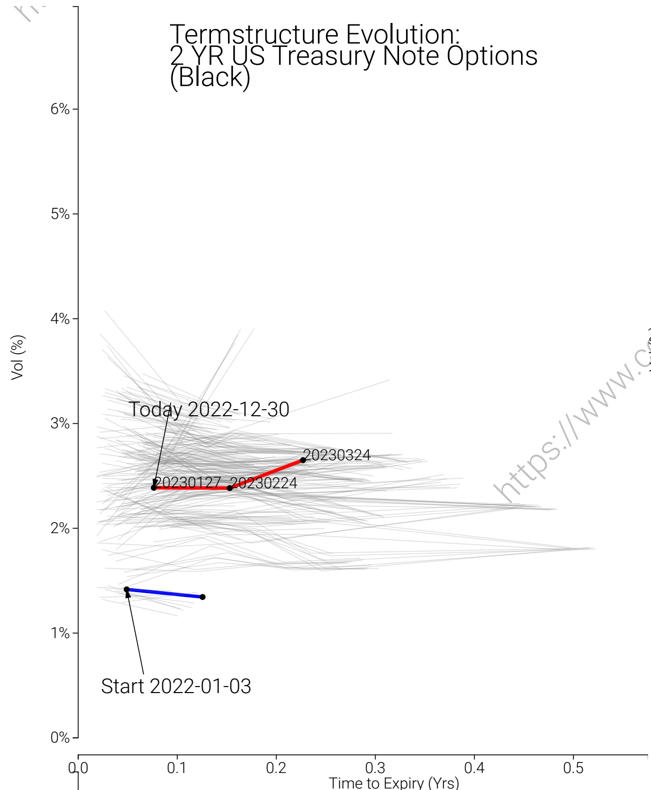

Front Month Skews:
Eurodollar Options
(Black)
3.50%
3.00%
2.50%
2.00%
1.50%
1.00%
0.50%
0.00%
Today 2022-12-30
Start 2022-01-03
99.00%
99.20%
99.40%
99.60%
99.80%
100.00%
100.20%
100.40%
100.60%
100.80%
101.00%

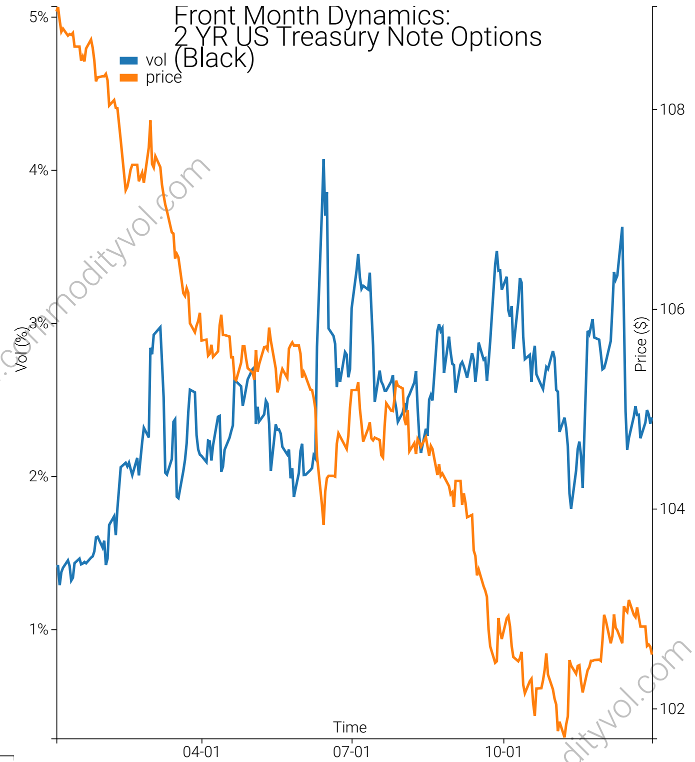

Termstructure Evolution:
Eurodollar Options
(Bachelier)
Vol (%)
300%
200%
100%
0%
Today 2022-12-30
Start 2022-01-03
20230113
20240318
20251215
1
2
3
4
Time to Expiry (Yrs)

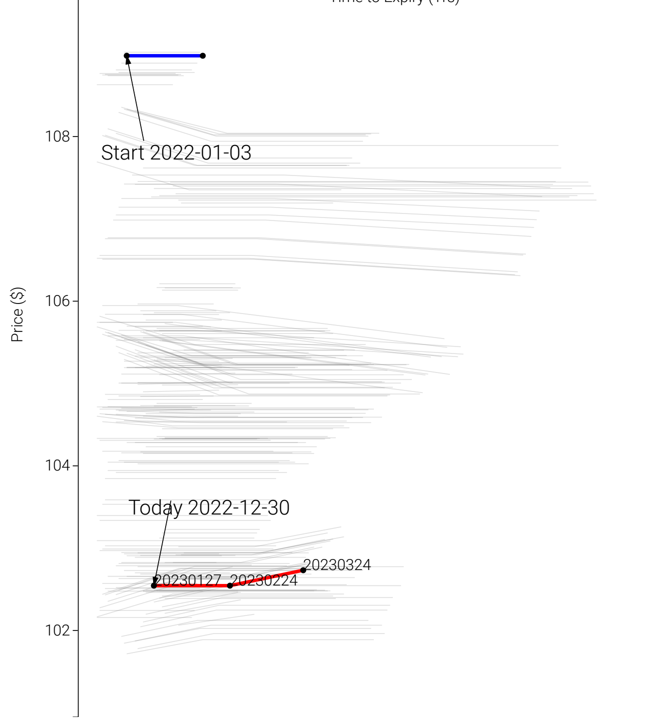

Front Month Dynamics:
Eurodollar Options
(Bachelier)
vol
price
Vol (%)
Price ($)
160%
140%
120%
100%
80%
60%
40%
20%
99
98
97
96
95
04-01
07-01
10-01
Time

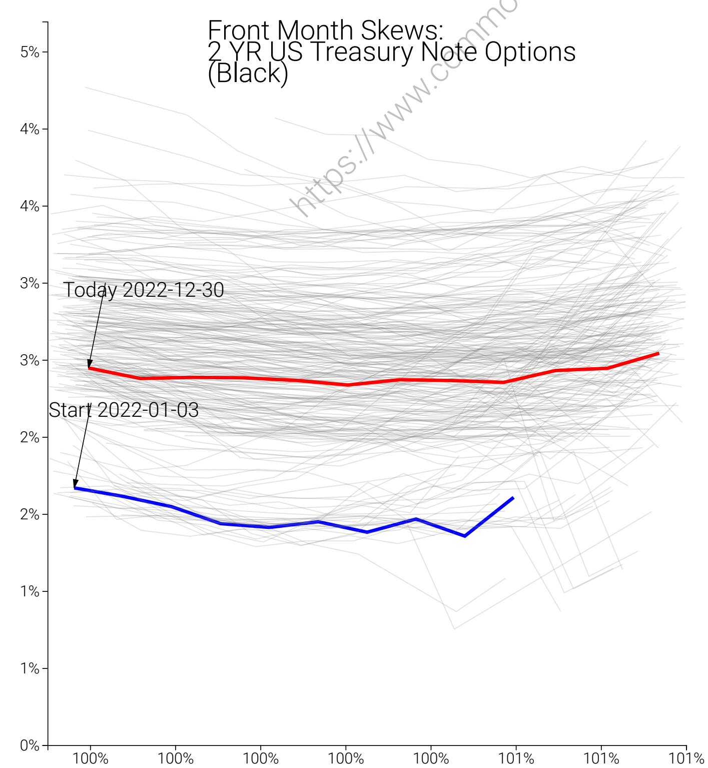

Price ($)
100
99
98
97
96
95
94
Start 2022-01-03
Today 2022-12-30
20230113
20240318
20251215

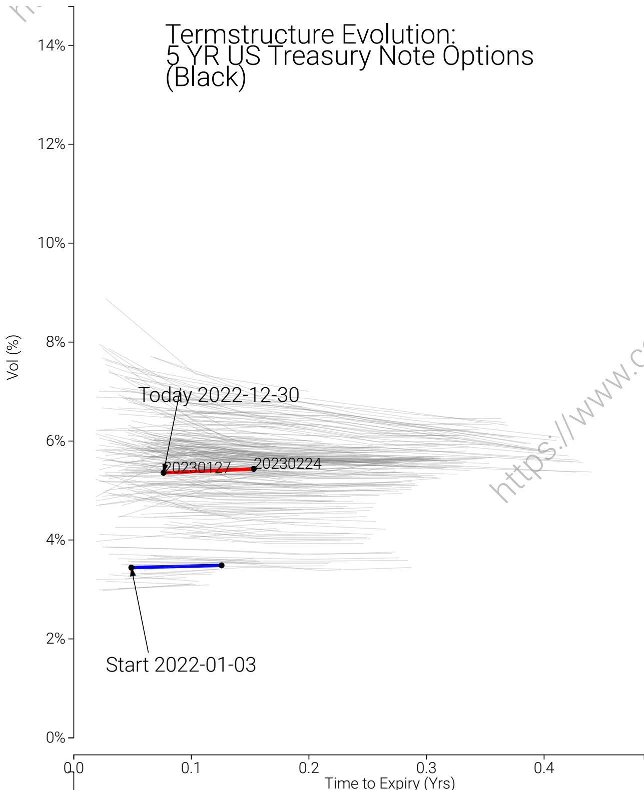

Front Month Skews:
Eurodollar Options
(Bachelier)
300.00%
250.00%
200.00%
150.00%
100.00%
50.00%
0.00%
Today 2022-12-30
Start 2022-01-03
99.00%
99.20%
99.40%
99.60%
99.80%
100.00%
100.20%
100.40%
100.60%
100.80%
101.00%

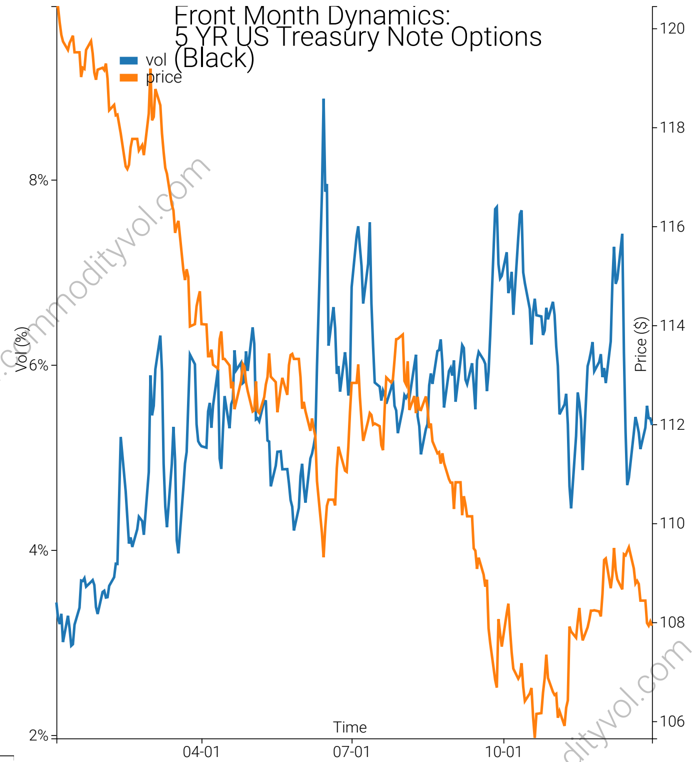

Termstructure Evolution:
2 YR US Treasury Note Options
(Black)
Today 2022-12-30
Start 2022-01-03
20230127
20230224
20230324
Vol (%)
Time to Expiry (Yrs)

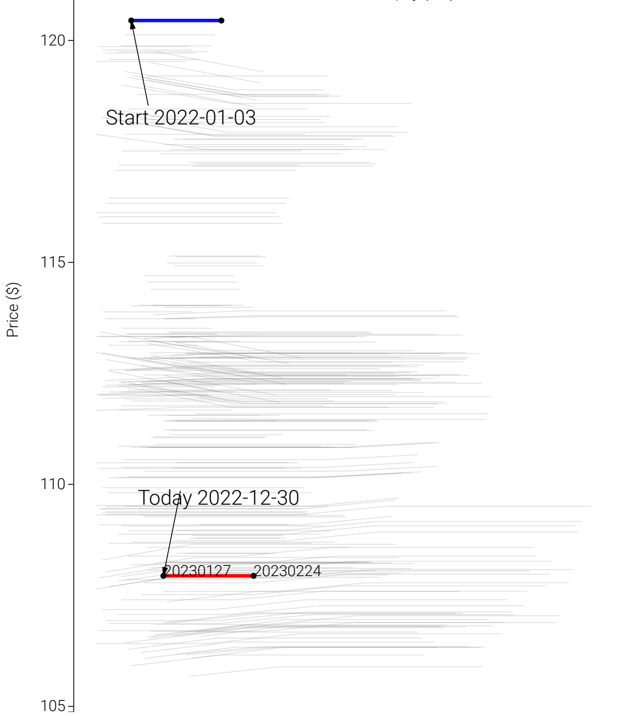

Front Month Dynamics:
2 YR US Treasury Note Options
(Black)
vol
price
Vol (%)
Price ($)
Time
04-01
07-01
10-01

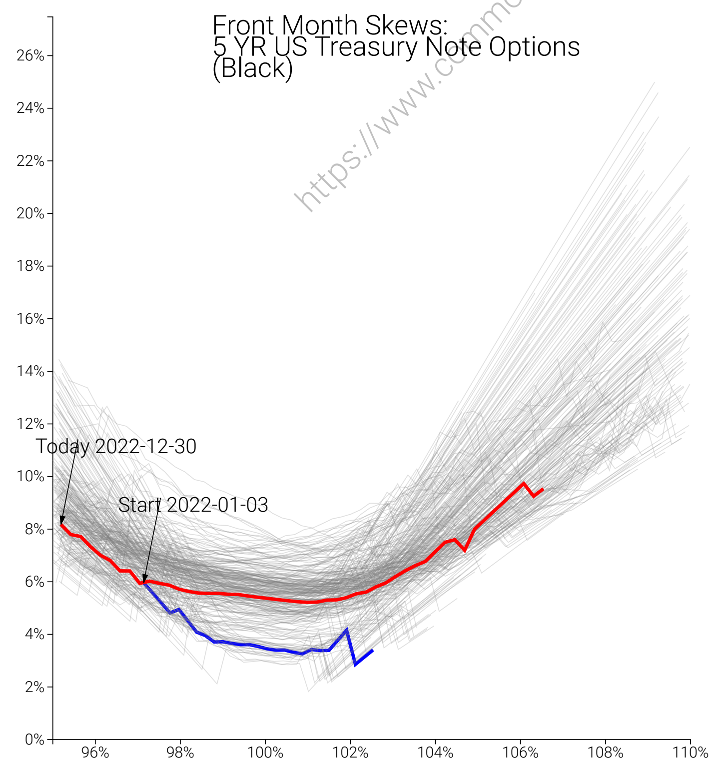

Start 2022-01-03
Today 2022-12-30
20230127
20230224
20230324
Price ($)

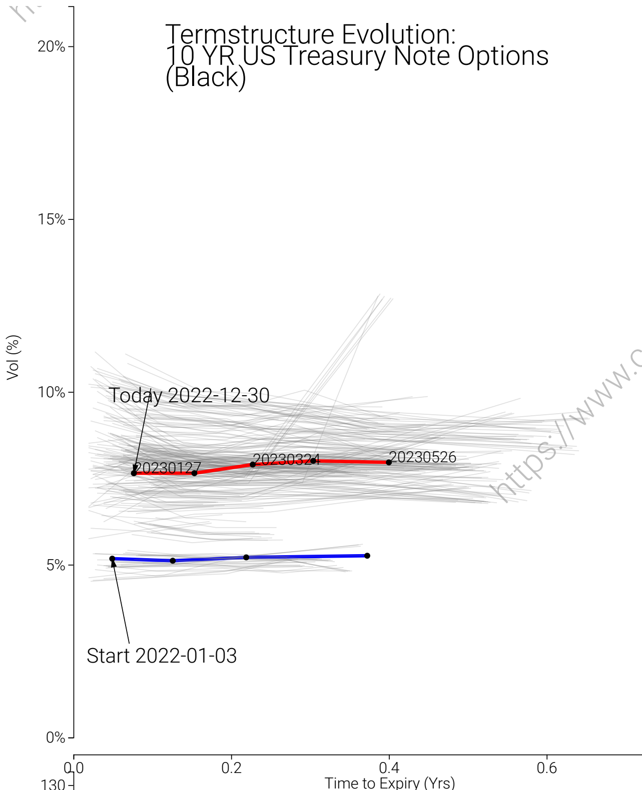

Front Month Skews:
2 YR US Treasury Note Options
(Black)
Today 2022-12-30
Start 2022-01-03

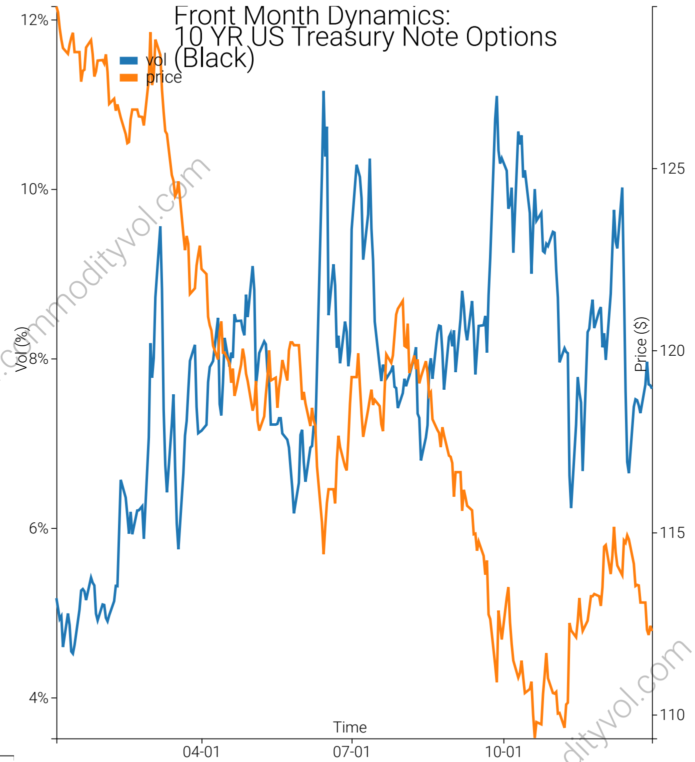

Termstructure Evolution:
5 YR US Treasury Note Options
(Black)
Vol (%)
14%
12%
10%
8%
6%
4%
2%
0%
Today 2022-12-30
20230127
20230224
Start 2022-01-03
0.0
0.1
0.2
0.3
0.4
Time to Expiry (Yrs)

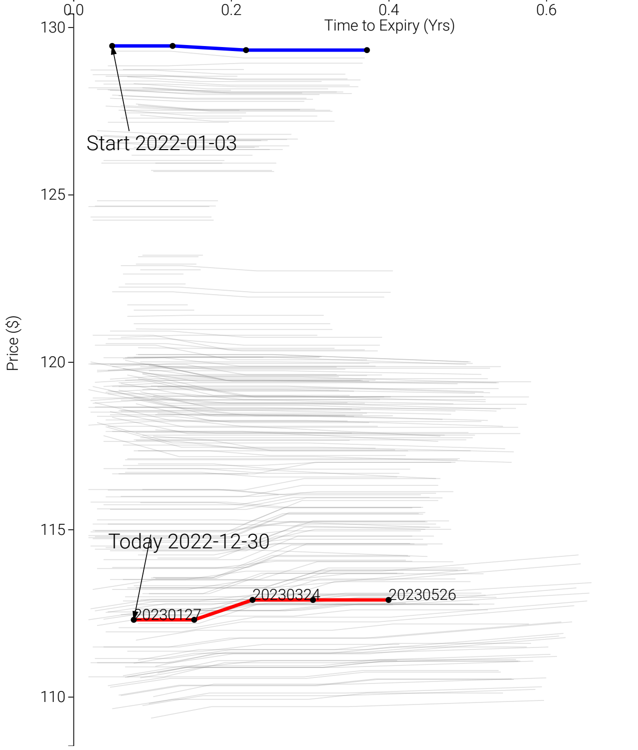

Front Month Dynamics:
5 YR US Treasury Note Options
(Black)
vol
price
Vol (%)
8%
6%
4%
2%
Price ($)
120
118
116
114
112
110
108
106
Time
04-01
07-01
10-01
https://www.commodityvol.com

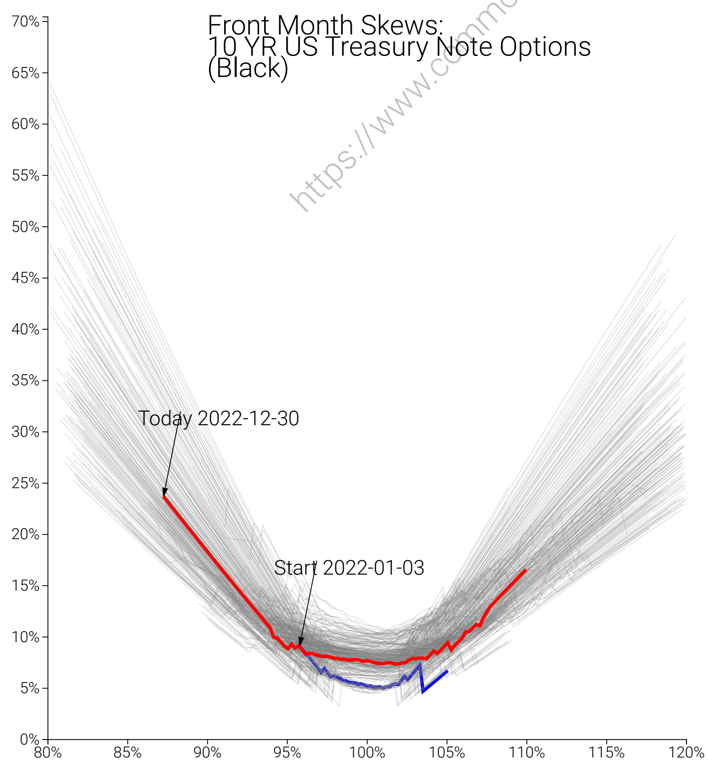

Price ($)
120
115
110
105
Start 2022-01-03
Today 2022-12-30
20230127
20230224

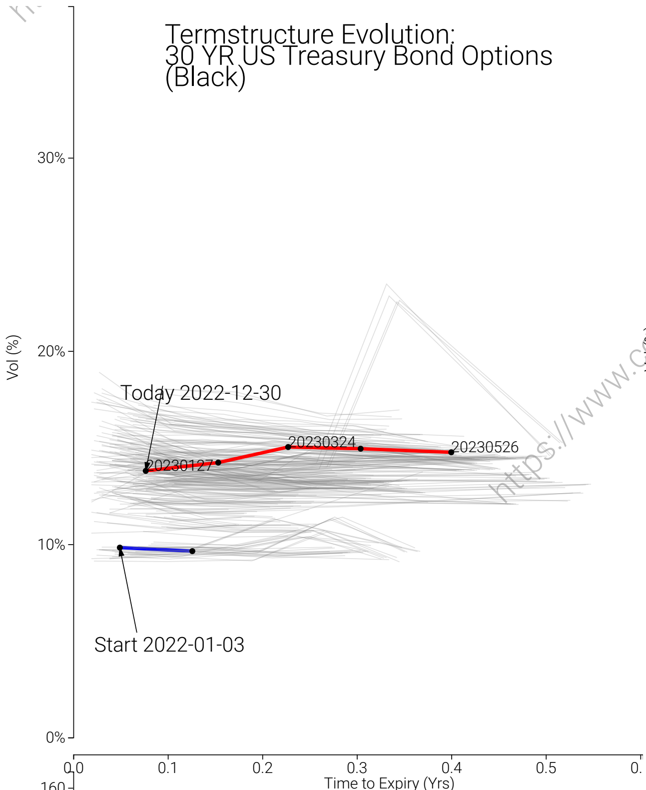

Front Month Skews:
5 YR US Treasury Note Options
(Black)
26%
24%
22%
20%
18%
16%
14%
12%
10%
8%
6%
4%
2%
0%
Today 2022-12-30
Start 2022-01-03
96%
98%
100%
102%
104%
106%
108%
110%
https://www.commodityvol.com

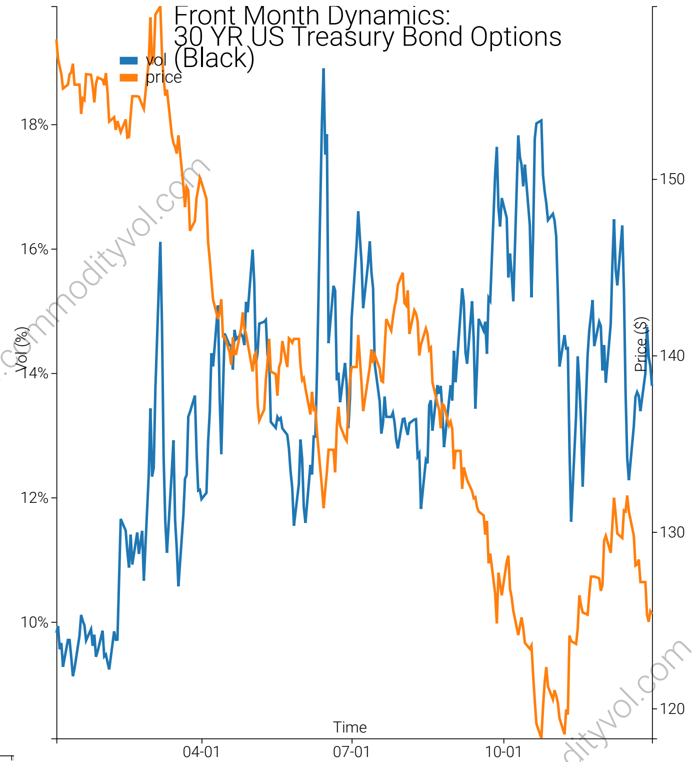

Termstructure Evolution:
10 YR US Treasury Note Options
(Black)
Vol (%)
20%
15%
10%
5%
0%
Today 2022-12-30
20230127
20230324
20230526
Start 2022-01-03
0.0
0.2
0.4
0.6
Time to Expiry (Yrs)

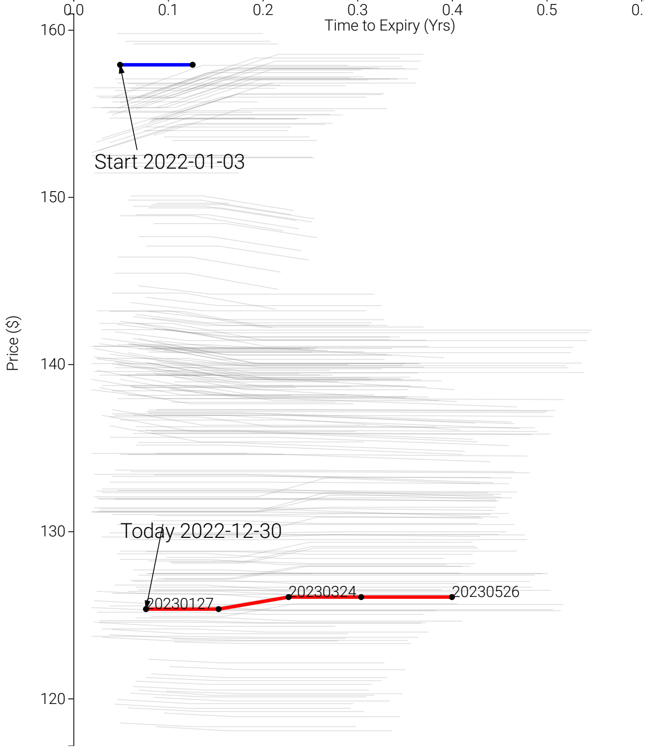

Front Month Dynamics:
10 YR US Treasury Note Options
(Black)
vol
price
Vol (%)
12%
10%
8%
6%
4%
Price ($)
125
120
115
110
Time
04-01
07-01
10-01

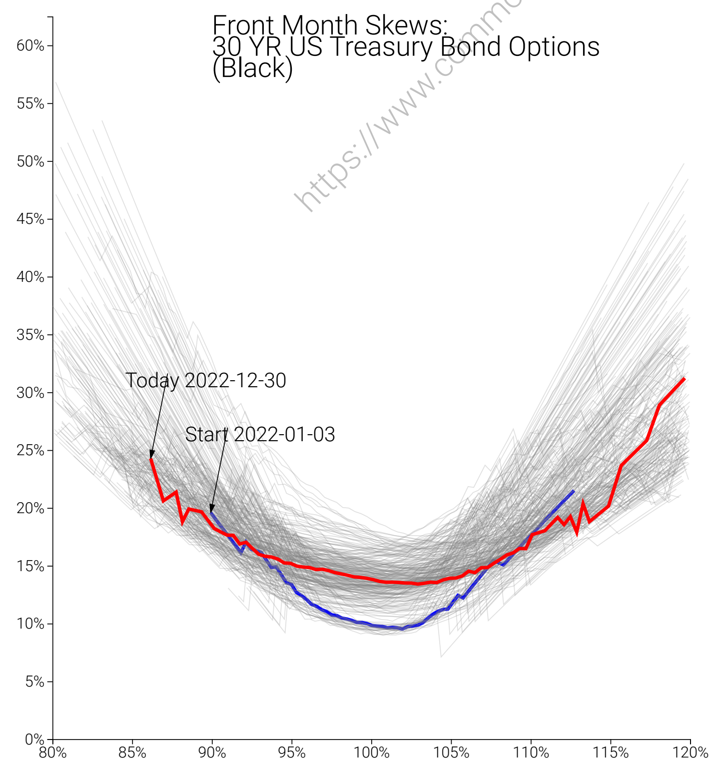

Price ($)
130
125
120
115
110
Start 2022-01-03
Today 2022-12-30
20230127
20230324
20230526

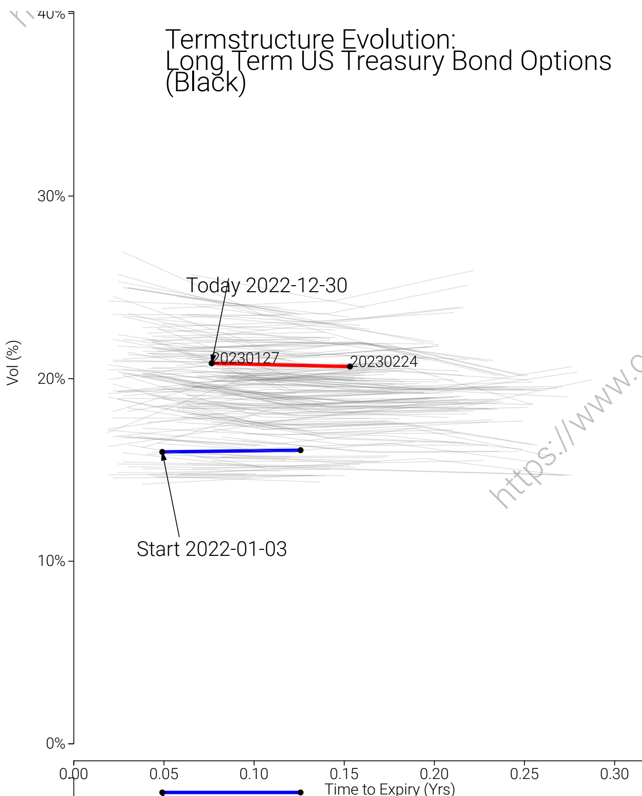

Front Month Skews:
10 YR US Treasury Note Options
(Black)
70%
65%
60%
55%
50%
45%
40%
35%
30%
25%
20%
15%
10%
5%
0%
Today 2022-12-30
Start 2022-01-03
80%
85%
90%
95%
100%
105%
110%
115%
120%

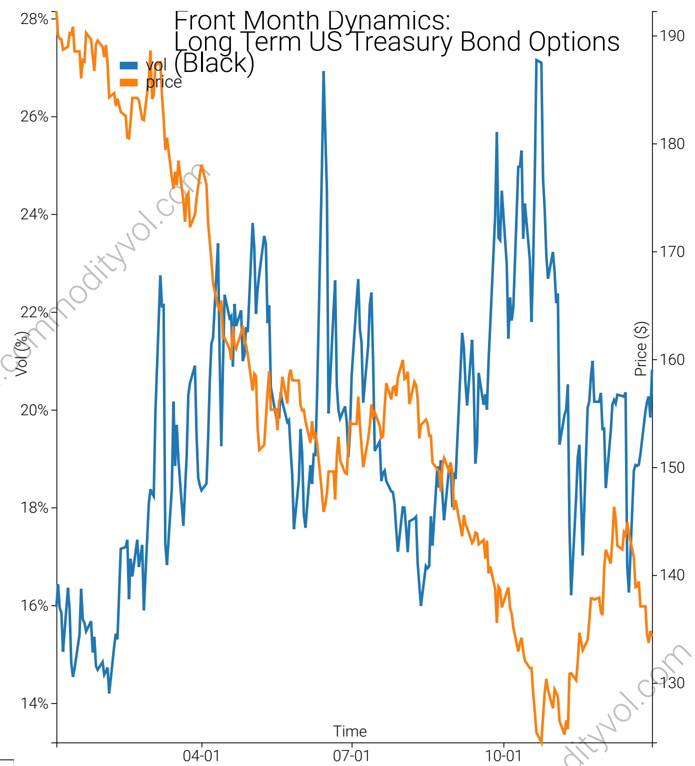

Termstructure Evolution:
30 YR US Treasury Bond Options
(Black)
Vol (%)
Today 2022-12-30
20230127
20230324
20230526
Start 2022-01-03
Time to Expiry (Yrs)
0%
10%
20%
30%
0.0
0.1
0.2
0.3
0.4
0.5

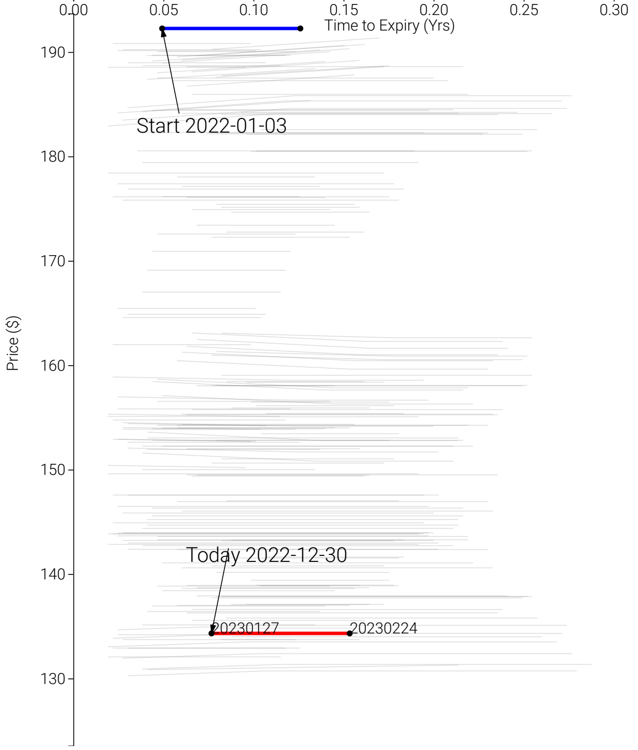

Front Month Dynamics:
30 YR US Treasury Bond Options
(Black)
vol
price
Vol (%)
Price ($)
Time
04-01
07-01
10-01
10%
12%
14%
16%
18%
120
130
140
150

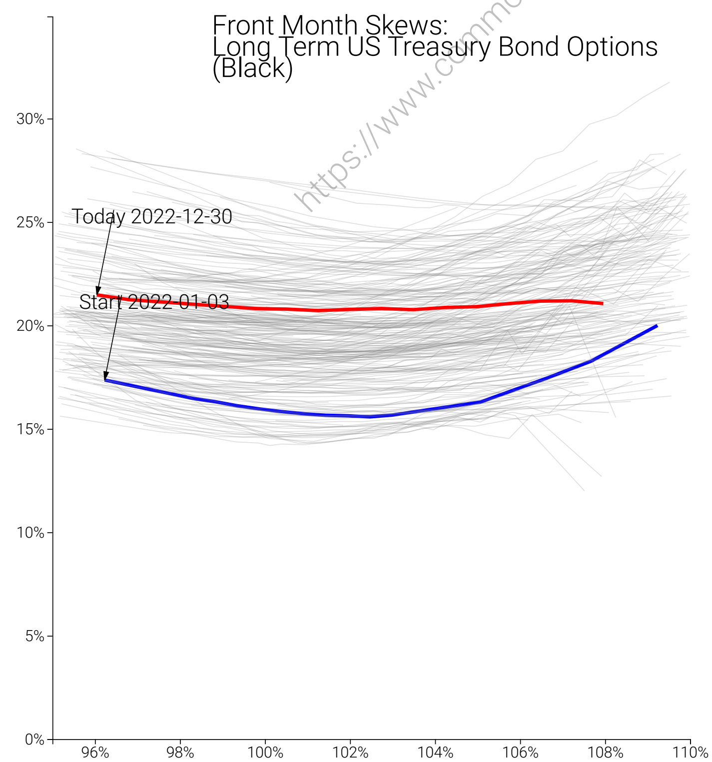

Price ($)
Start 2022-01-03
Today 2022-12-30
20230127
20230324
20230526
120
130
140
150
160


Front Month Skews:
30 YR US Treasury Bond Options
(Black)
Today 2022-12-30
Start 2022-01-03
0%
5%
10%
15%
20%
25%
30%
35%
40%
45%
50%
55%
60%
80%
85%
90%
95%
100%
105%
110%
115%
120%

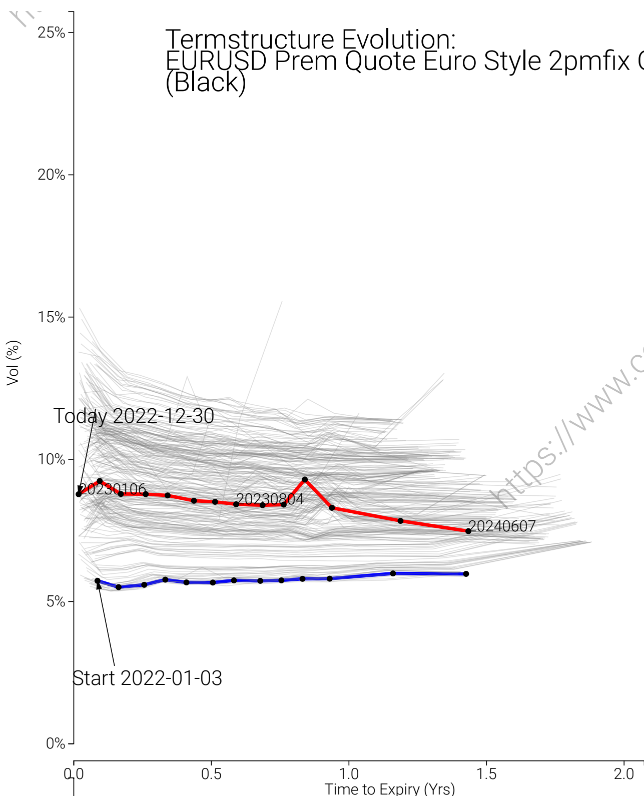

Termstructure Evolution:
Long Term US Treasury Bond Options
(Black)
Today 2022-12-30
20230127
20230224
Start 2022-01-03
Vol (%)
40%
30%
20%
10%
0%
0.00
0.05
0.10
0.15
0.20
0.25
0.30
Time to Expiry (Yrs)

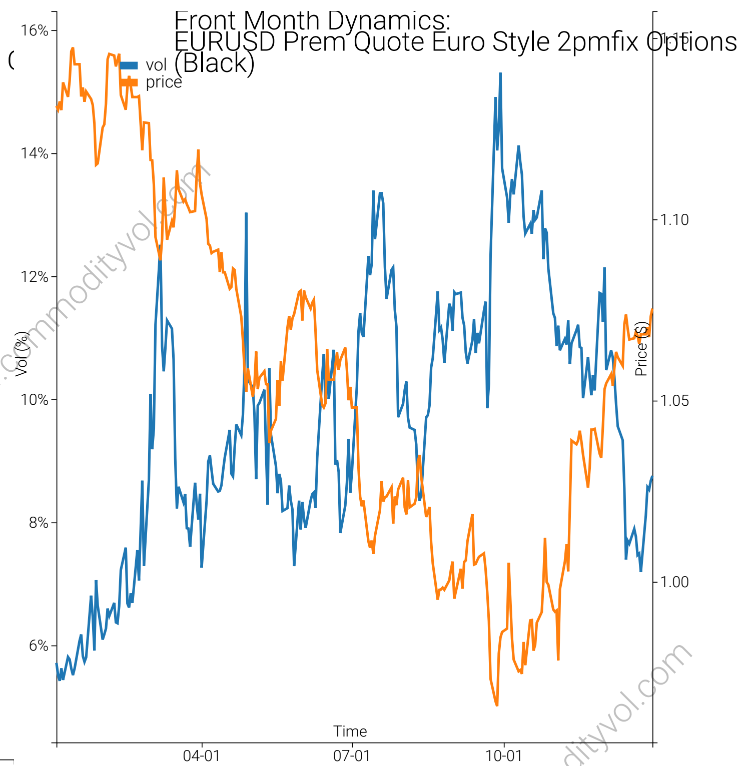

Front Month Dynamics:
Long Term US Treasury Bond Options
(Black)
vol
price
Vol (%)
Price ($)
28%
26%
24%
22%
20%
18%
16%
14%
190
180
170
160
150
140
130
04-01
07-01
10-01
Time

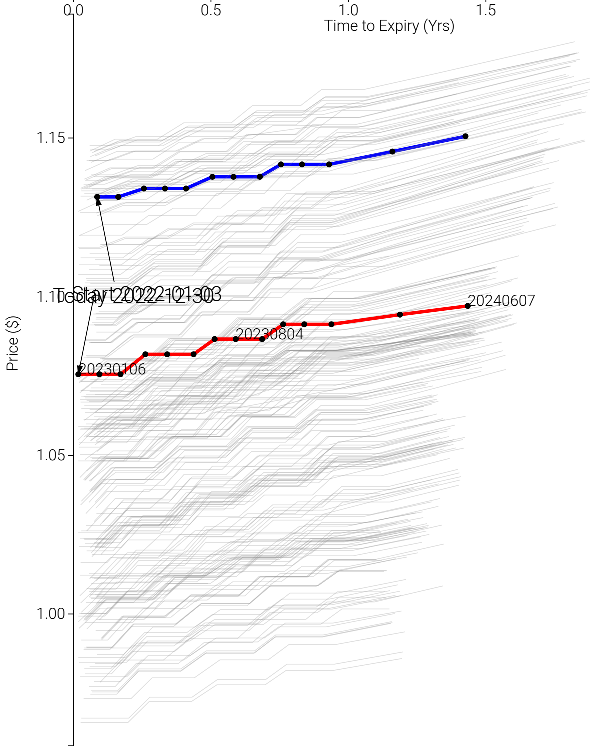

Start 2022-01-03
Today 2022-12-30
20230127
20230224
Price ($)
190
180
170
160
150
140
130

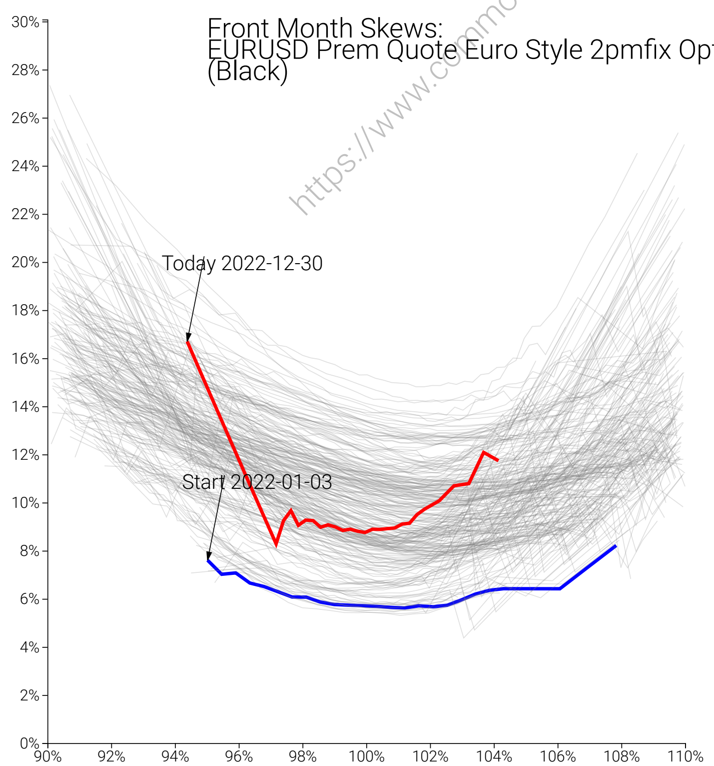

Front Month Skews:
Long Term US Treasury Bond Options
(Black)
Today 2022-12-30
Start 2022-01-03
30%
25%
20%
15%
10%
5%
0%
96%
98%
100%
102%
104%
106%
108%
110%

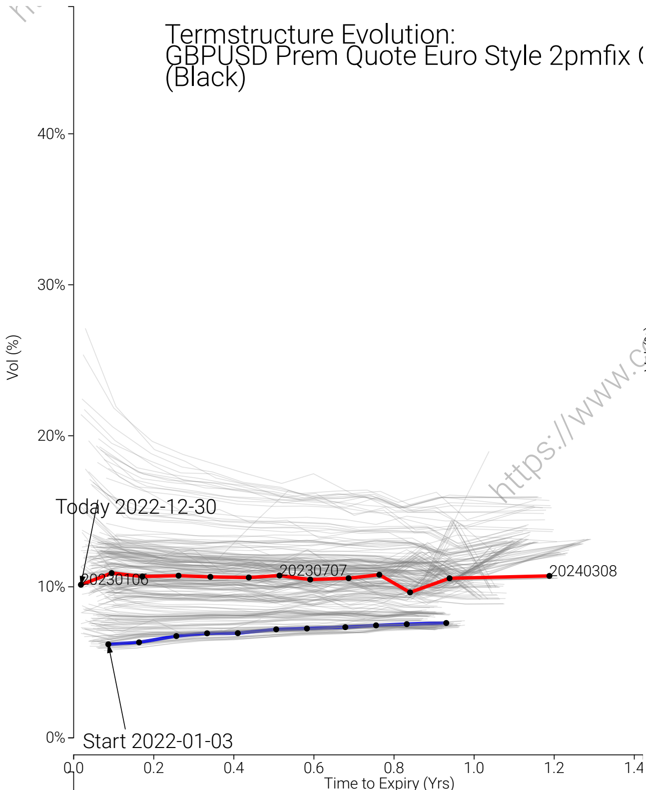
Forex

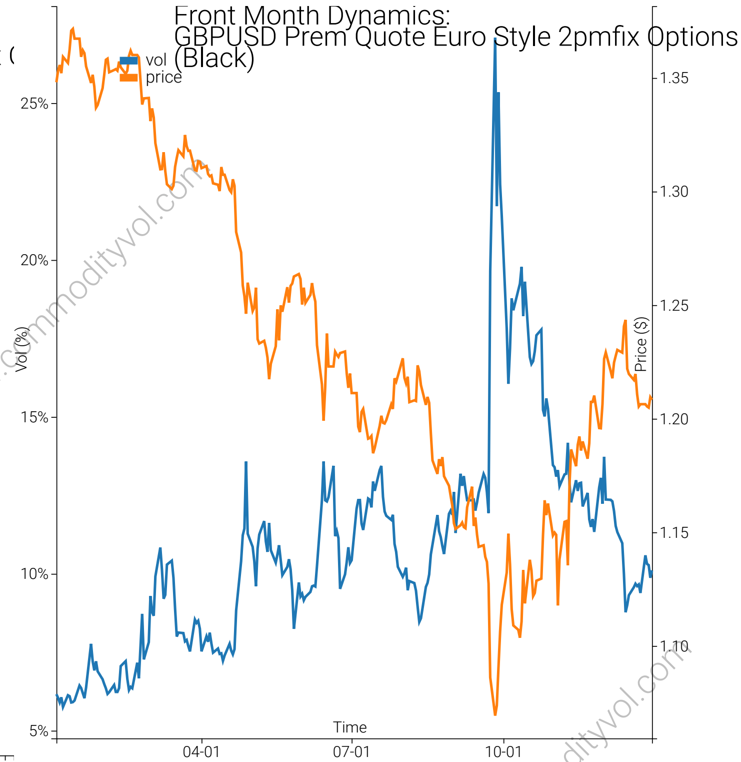

Termstructure Evolution:
EURUSD Prem Quote Euro Style 2pmfix (
(Black)
Vol (%)
Time to Expiry (Yrs)
Today 2022-12-30
Start 2022-01-03
20230106
20230804
20240607
https://www.commodityvol.com

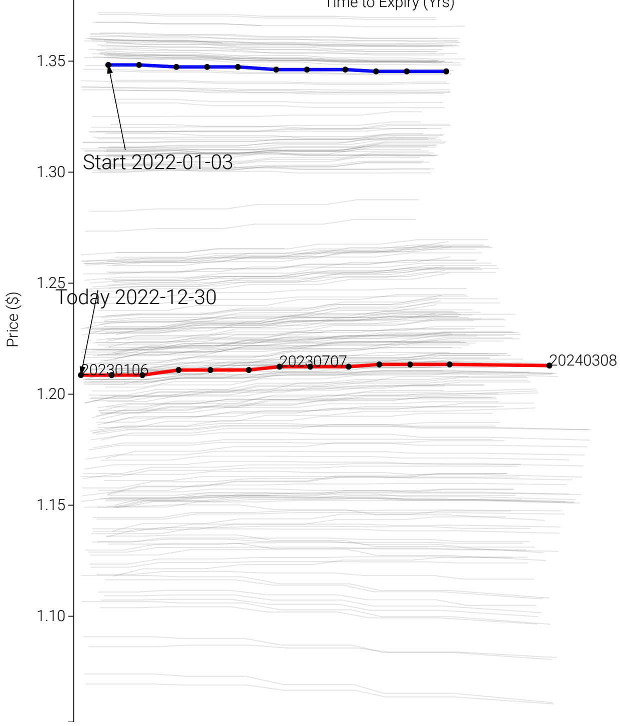

Front Month Dynamics:
EURUSD Prem Quote Euro Style 2pmfix Options
(Black)
vol
price
Vol (%)
Price ($)
Time
04-01
07-01
10-01
https://www.commodityvol.com

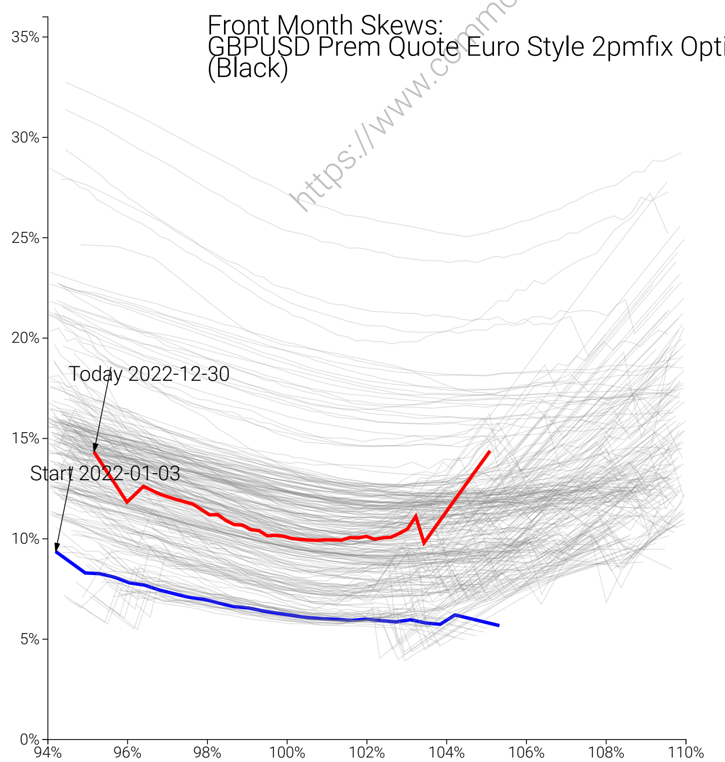

Price ($)
Today 2022-12-30
Start 2022-01-03
20230106
20230804
20240607

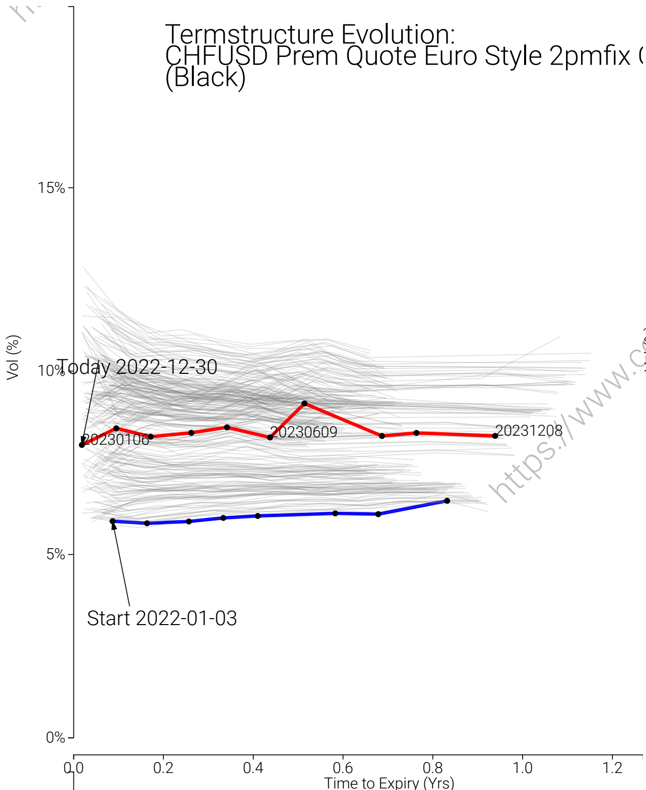

Front Month Skews:
EURUSD Prem Quote Euro Style 2pmfix Opti
(Black)
Today 2022-12-30
Start 2022-01-03
https://www.commodityvol.com

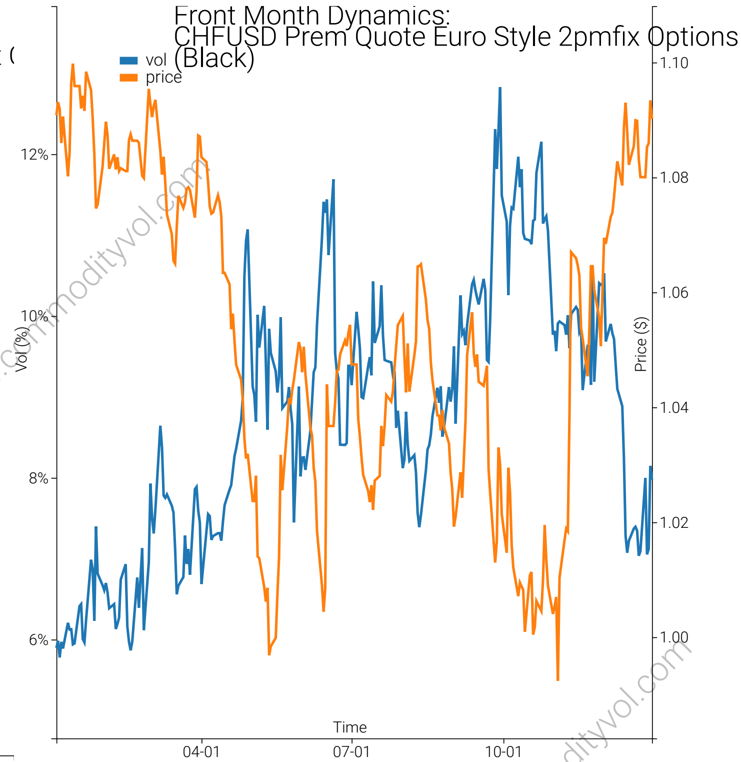

Termstructure Evolution:
GBPUSD Prem Quote Euro Style 2pmfix (
(Black)
Vol (%)
40%
30%
20%
10%
0%
Today 2022-12-30
20230106
20230707
20240308
Start 2022-01-03
0.0
0.2
0.4
0.6
0.8
1.0
1.2
1.4
Time to Expiry (Yrs)

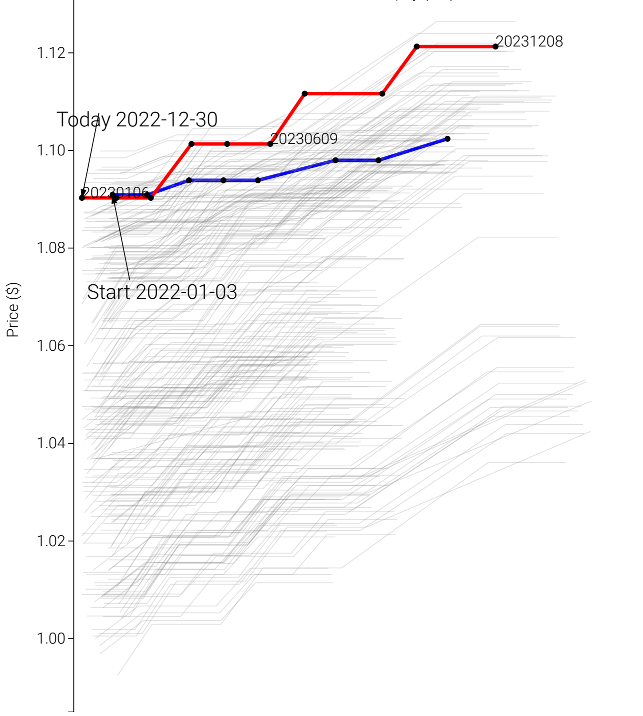

Front Month Dynamics:
GBPUSD Prem Quote Euro Style 2pmfix Options
(Black)
vol
price
Vol (%)
25%
20%
15%
10%
5%
Price ($)
1.35
1.30
1.25
1.20
1.15
1.10
Time
04-01
07-01
10-01

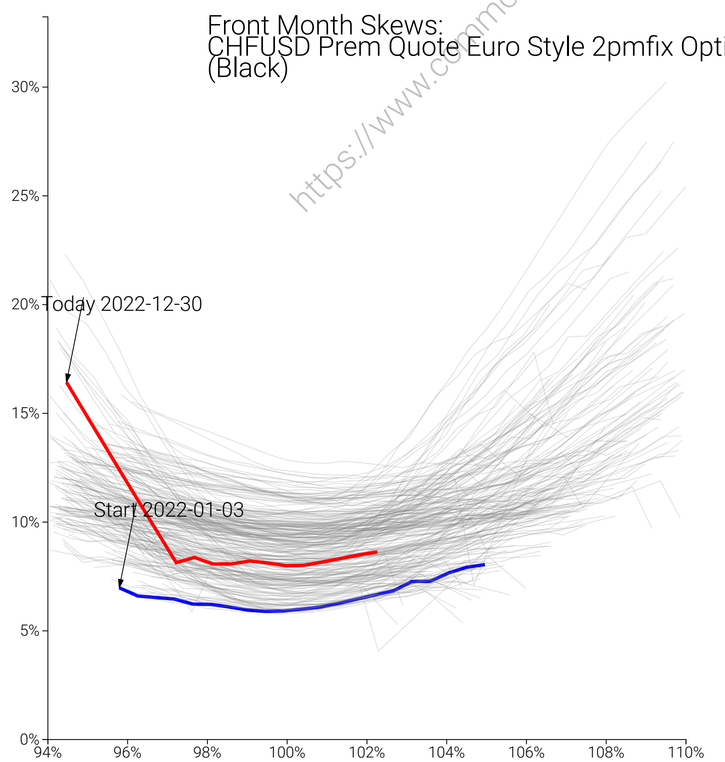

Price ($)
1.35
1.30
1.25
1.20
1.15
1.10
Start 2022-01-03
Today 2022-12-30
20230106
20230707
20240308

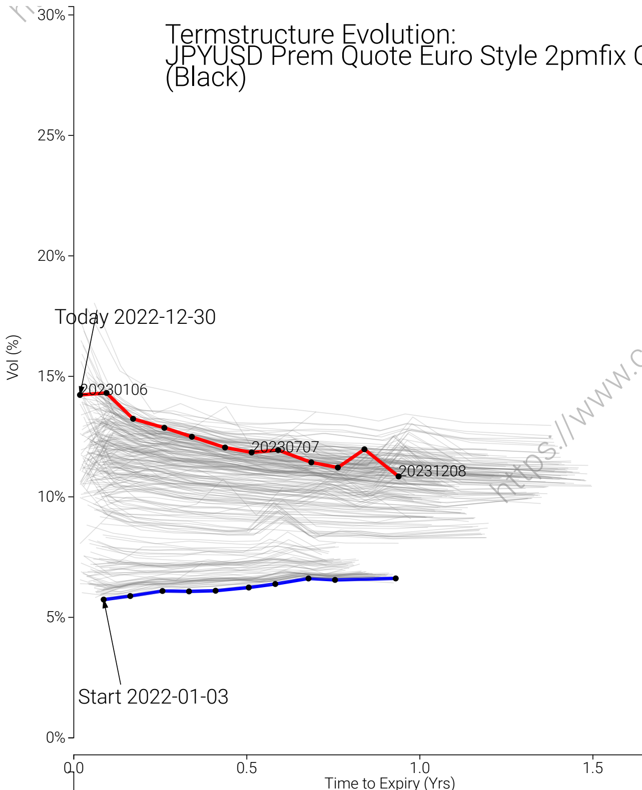

Front Month Skews:
GBPUSD Prem Quote Euro Style 2pmfix Opti
(Black)
35%
30%
25%
20%
15%
10%
5%
0%
Today 2022-12-30
Start 2022-01-03
94%
96%
98%
100%
102%
104%
106%
108%
110%

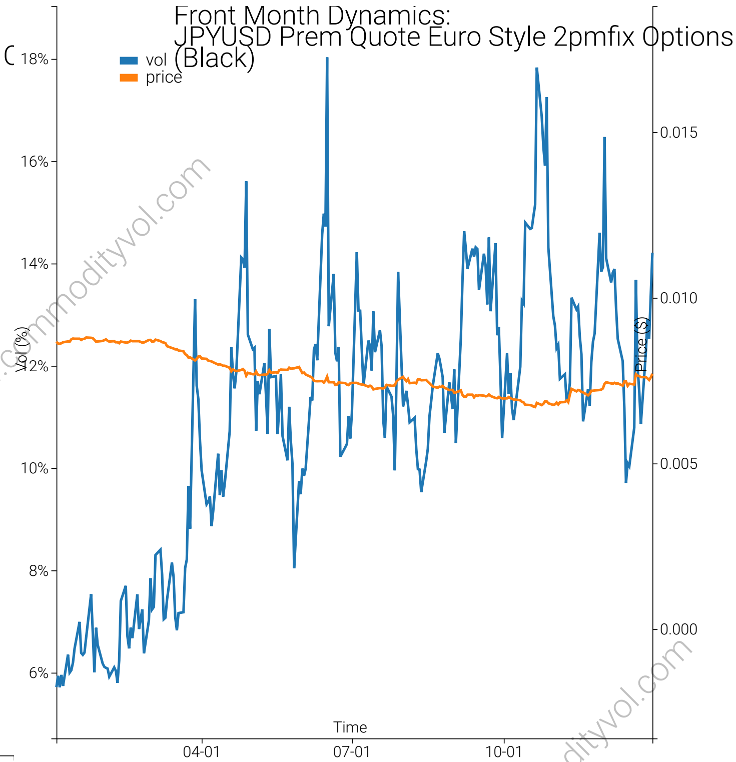

Termstructure Evolution:
CHFUSD Prem Quote Euro Style 2pmfix (
(Black)
Vol (%)
Today 2022-12-30
20230106
20230609
20231208
Start 2022-01-03
Time to Expiry (Yrs)

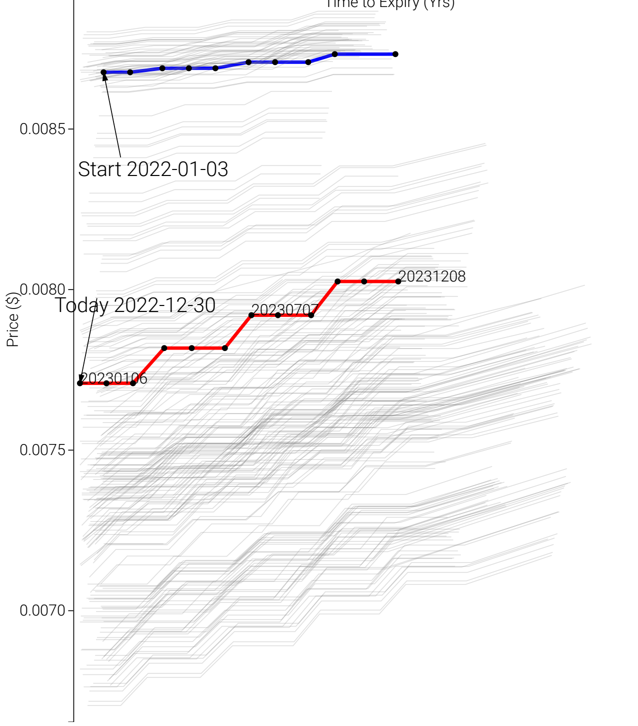

Front Month Dynamics:
CHFUSD Prem Quote Euro Style 2pmfix Options
(Black)
vol
price
Vol (%)
Price ($)
Time

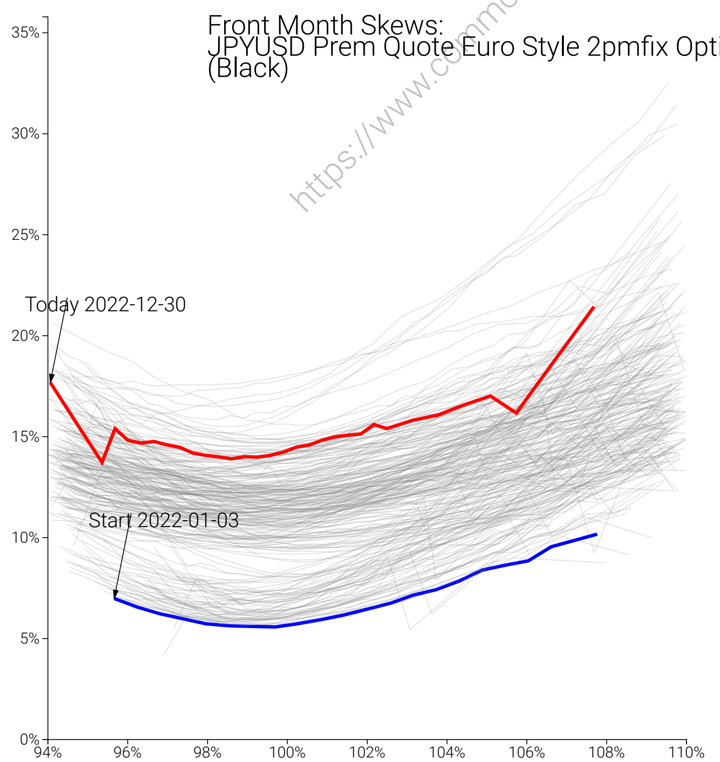

Today 2022-12-30
20231208
20230609
20230106
Start 2022-01-03
Price ($)

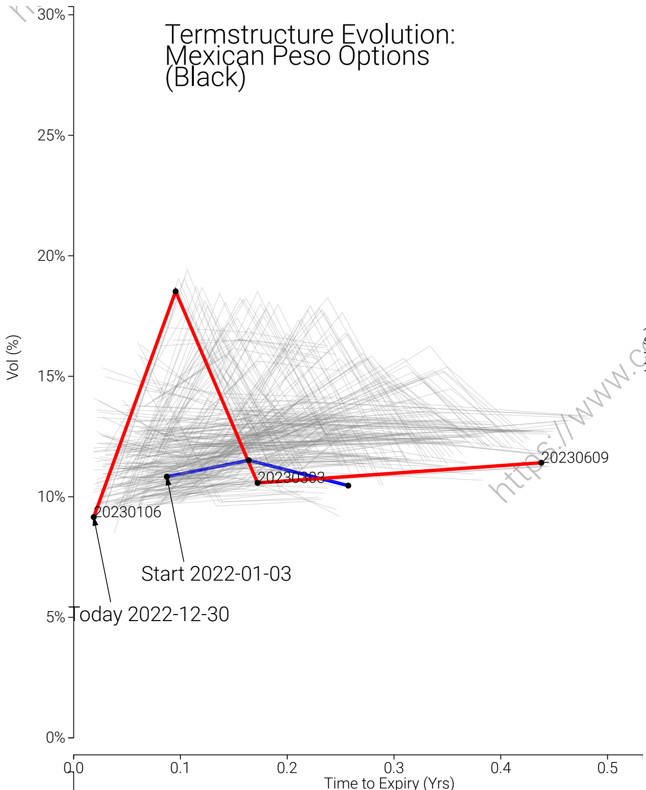

Front Month Skews:
CHFUSD Prem Quote Euro Style 2pmfix Opti
(Black)
Today 2022-12-30
Start 2022-01-03

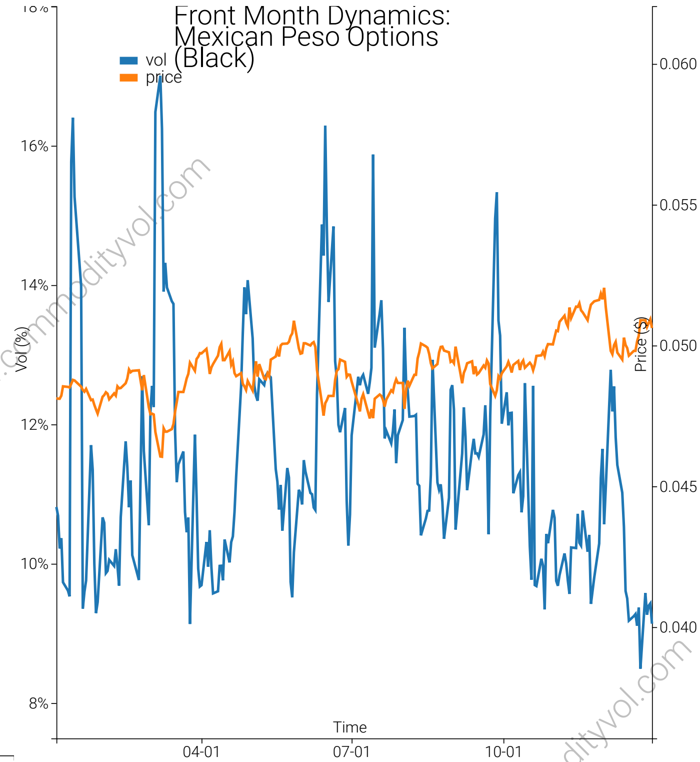

Termstructure Evolution:
JPYUSD Prem Quote Euro Style 2pmfix C
(Black)
Today 2022-12-30
20230106
20230707
20231208
Start 2022-01-03
Vol (%)
30%
25%
20%
15%
10%
5%
0%
0.0
0.5
1.0
1.5
Time to Expiry (Yrs)

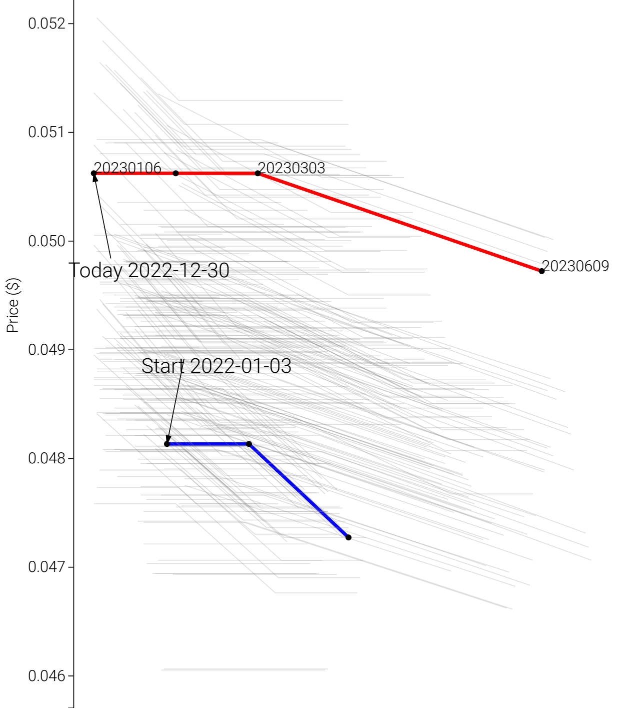

Front Month Dynamics:
JPYUSD Prem Quote Euro Style 2pmfix Options
(Black)
vol
price
Vol (%)
Price ($)
18%
16%
14%
12%
10%
8%
6%
0.015
0.010
0.005
0.000
Time
04-01
07-01
10-01

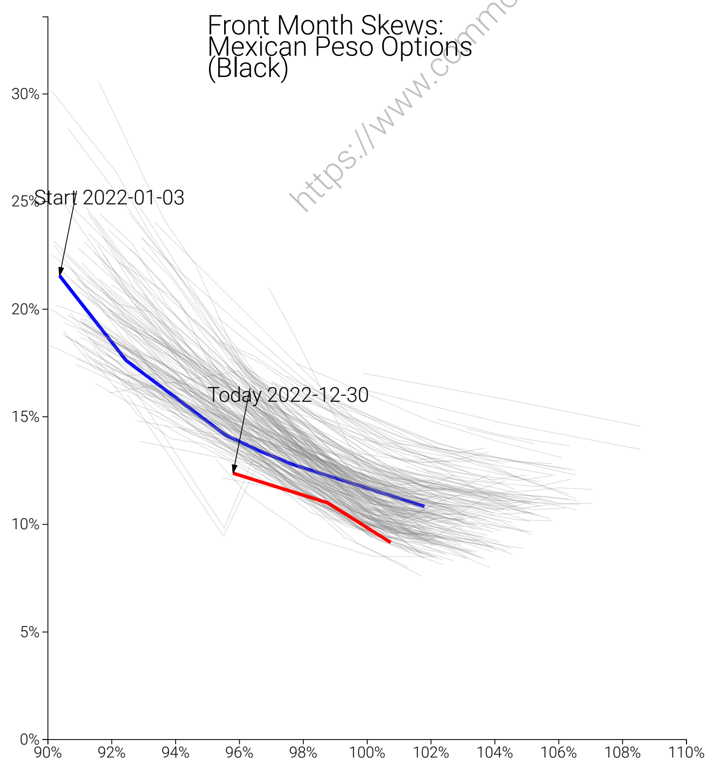

Start 2022-01-03
Today 2022-12-30
20230106
20230707
20231208
Price ($)
0.0085
0.0080
0.0075
0.0070

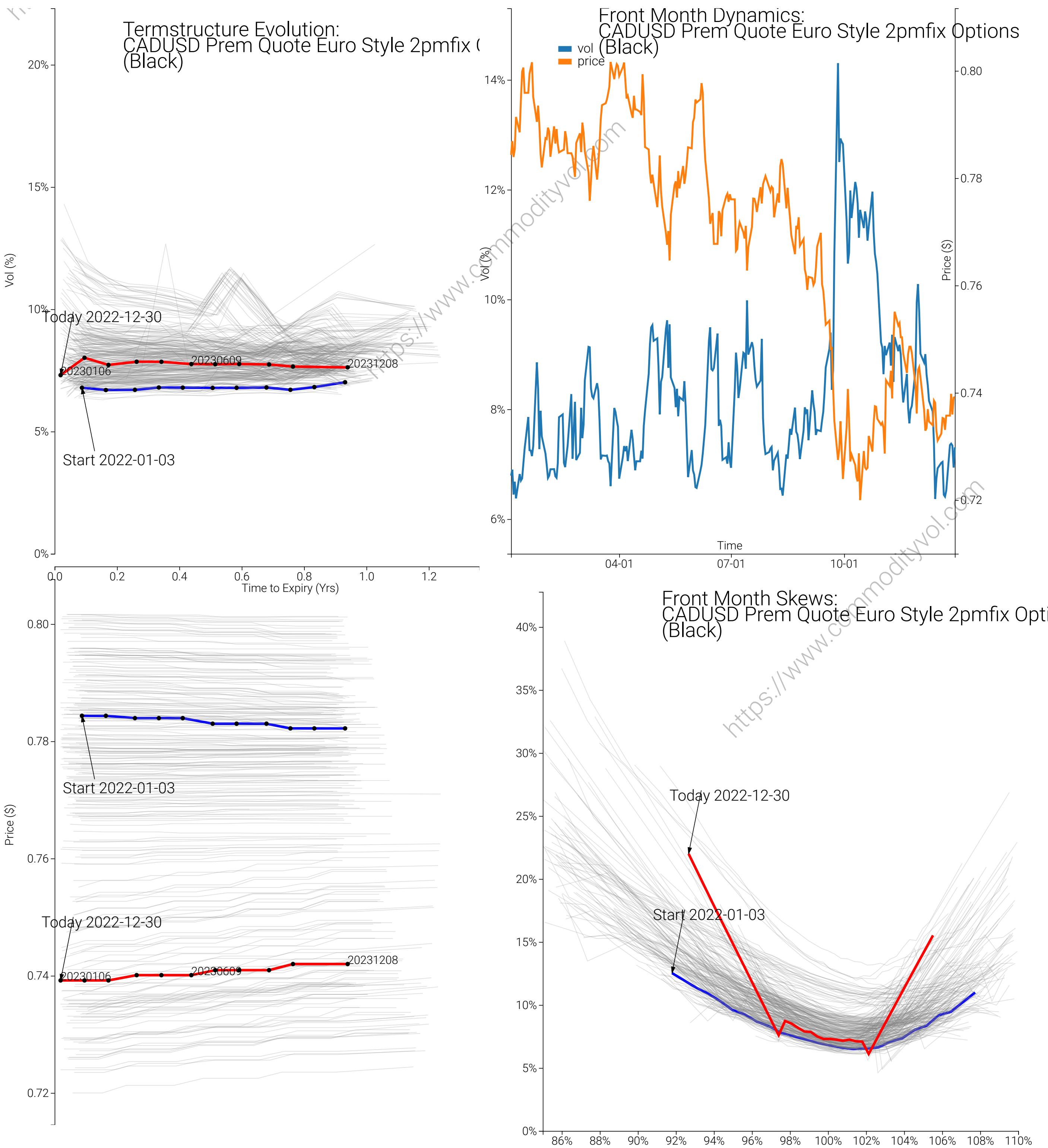

Front Month Skews:
JPYUSD Prem Quote Euro Style 2pmfix Optic
(Black)
Today 2022-12-30
Start 2022-01-03
35%
30%
25%
20%
15%
10%
5%
0%
94%
96%
98%
100%
102%
104%
106%
108%
110%


Termstructure Evolution:
Mexican Peso Options
(Black)
Vol (%)
Time to Expiry (Yrs)
20230106
20230303
20230609
Start 2022-01-03
Today 2022-12-30

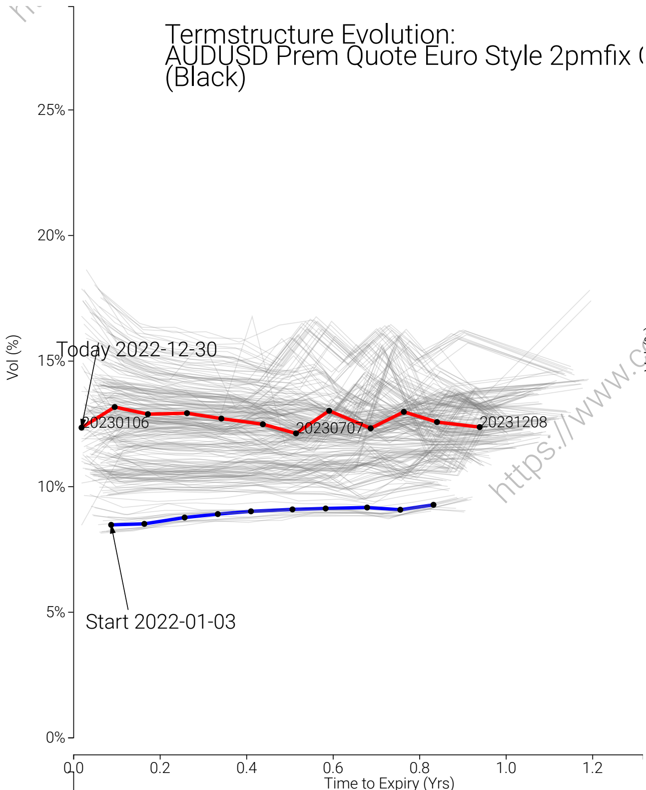

Front Month Dynamics:
Mexican Peso Options
(Black)
vol
price
Vol (%)
Price ($)
Time
04-01
07-01
10-01

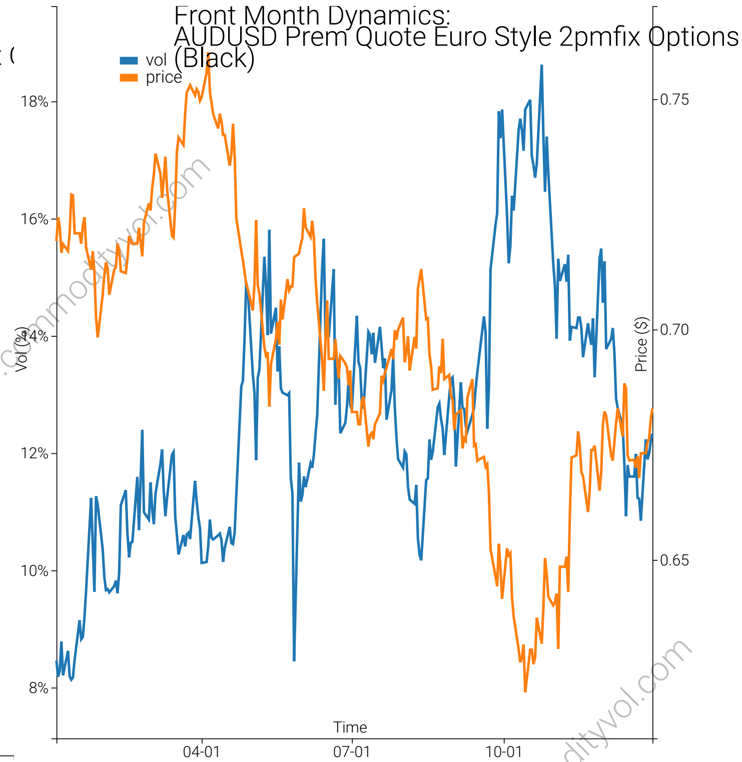

Price ($)
20230106
20230303
20230609
Today 2022-12-30
Start 2022-01-03

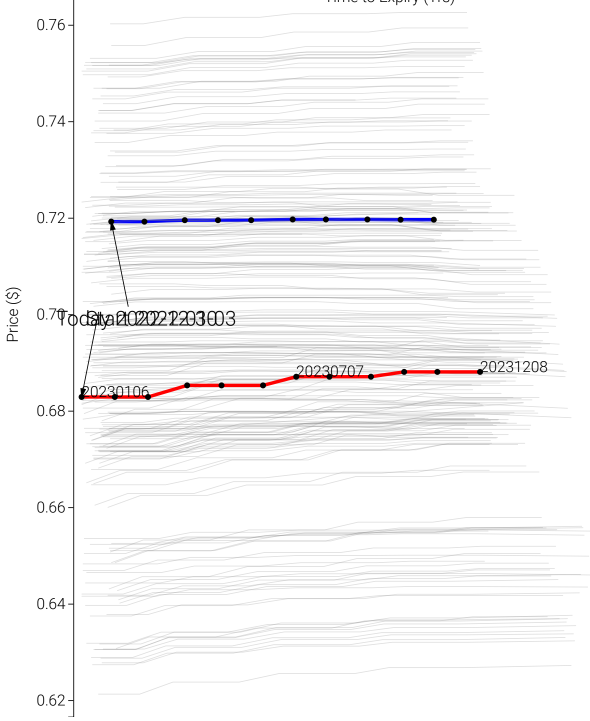

Front Month Skews:
Mexican Peso Options
(Black)
Start 2022-01-03
Today 2022-12-30

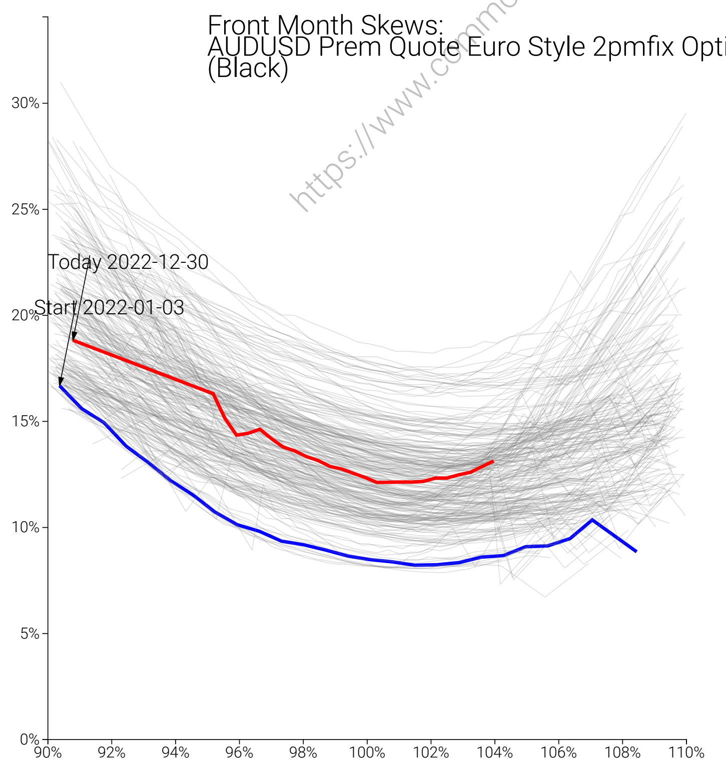


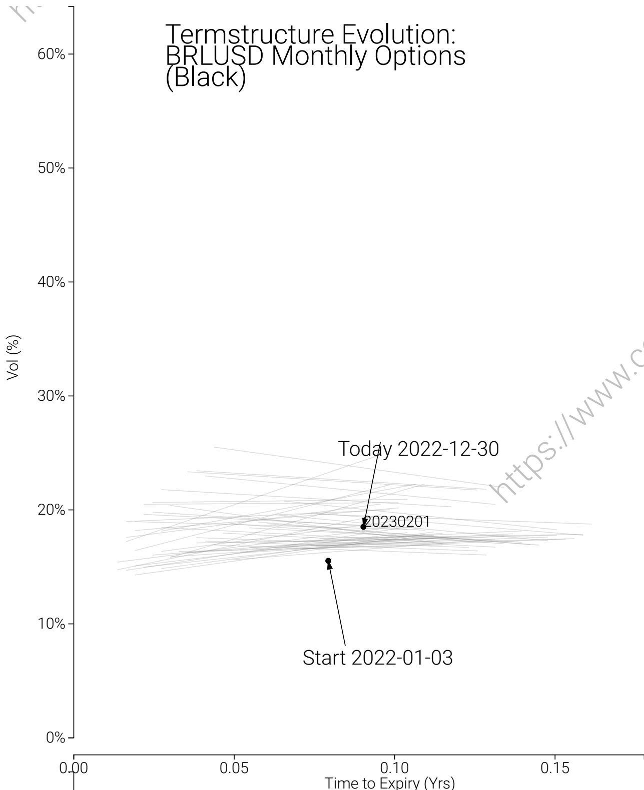
Termstructure Evolution:
CADUSD Prem Quote Euro Style 2pmfix (Black)
Vol (%)
Time to Expiry (Yrs)
Today 2022-12-30
Start 2022-01-03
20230106
20230609
20231208
Front Month Dynamics:
CADUSD Prem Quote Euro Style 2pmfix Options (Black)
vol
price
Vol (%)
Price ($)
Time
04-01
07-01
10-01
Price ($)
Today 2022-12-30
Start 2022-01-03
Front Month Skews:
CADUSD Prem Quote Euro Style 2pmfix Opti (Black)

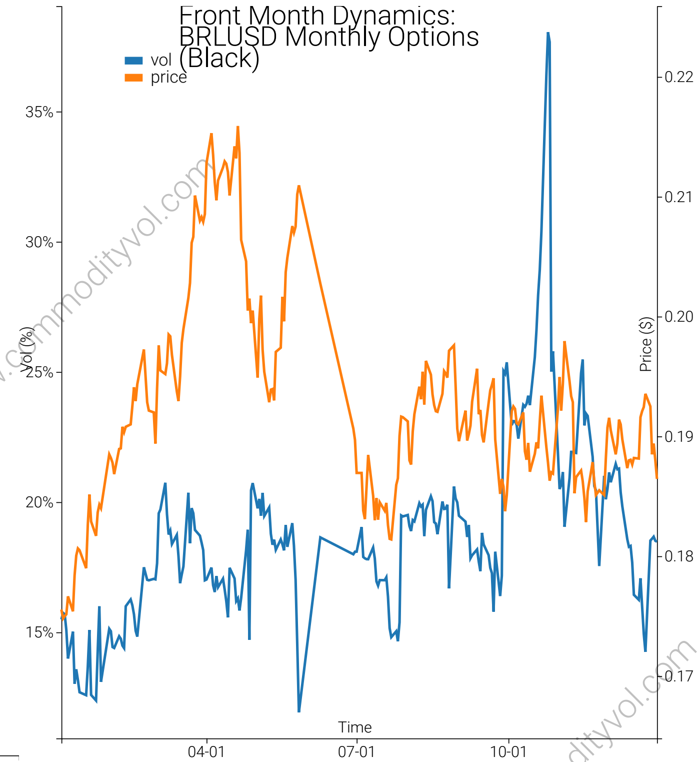

Termstructure Evolution:
AUDUSD Prem Quote Euro Style 2pmfix (
(Black)
Vol (%)
Today 2022-12-30
20230106
20230707
20231208
Start 2022-01-03
Time to Expiry (Yrs)

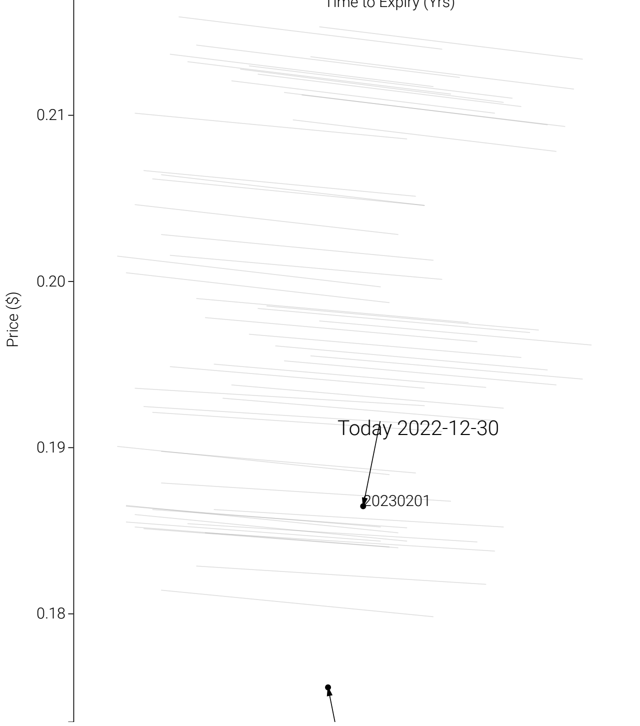

Front Month Dynamics:
AUDUSD Prem Quote Euro Style 2pmfix Options
(Black)
vol
price
Vol (%)
Price ($)
Time
04-01
07-01
10-01

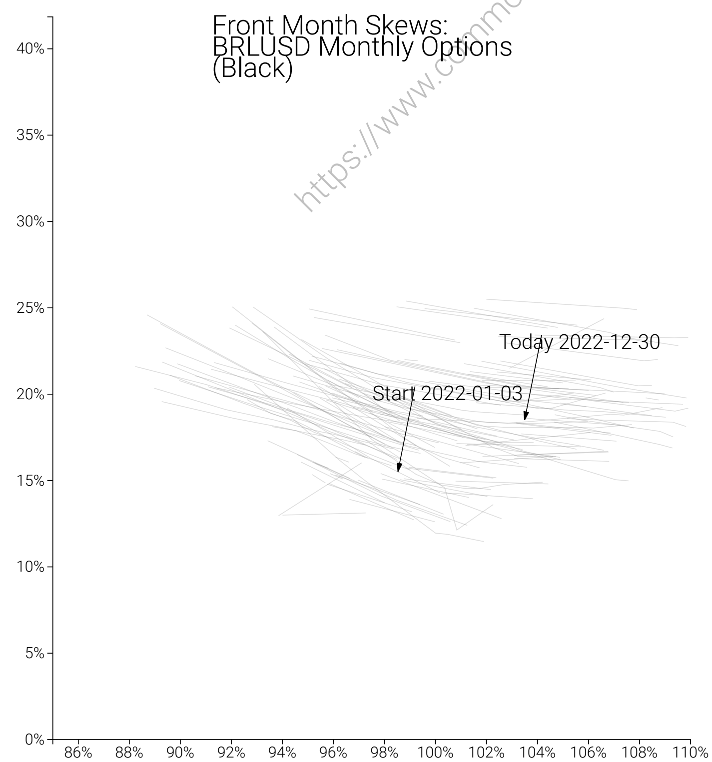

Price ($)
Today 2022-12-30
Start 2022-01-03
20230106
20230707
20231208

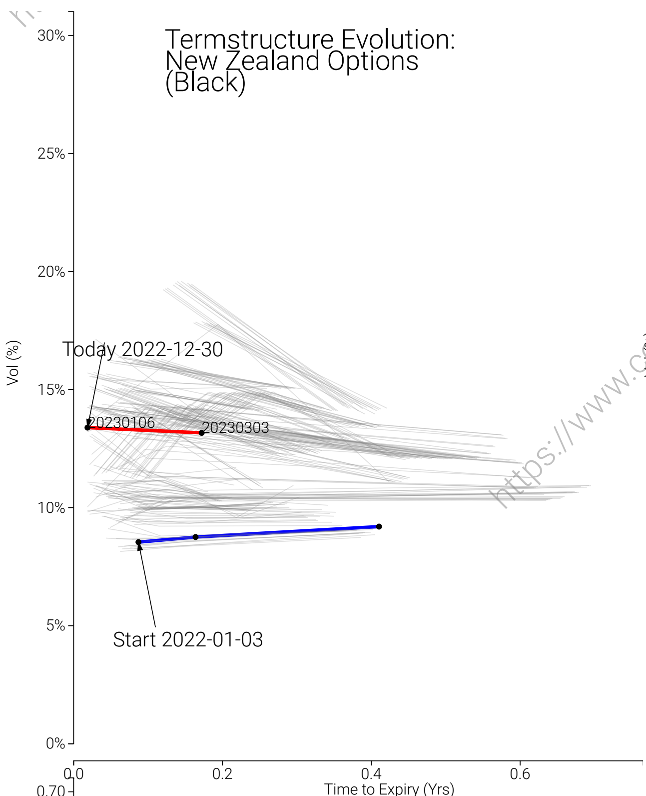

Front Month Skews:
AUDUSD Prem Quote Euro Style 2pmfix Opti
(Black)
Today 2022-12-30
Start 2022-01-03

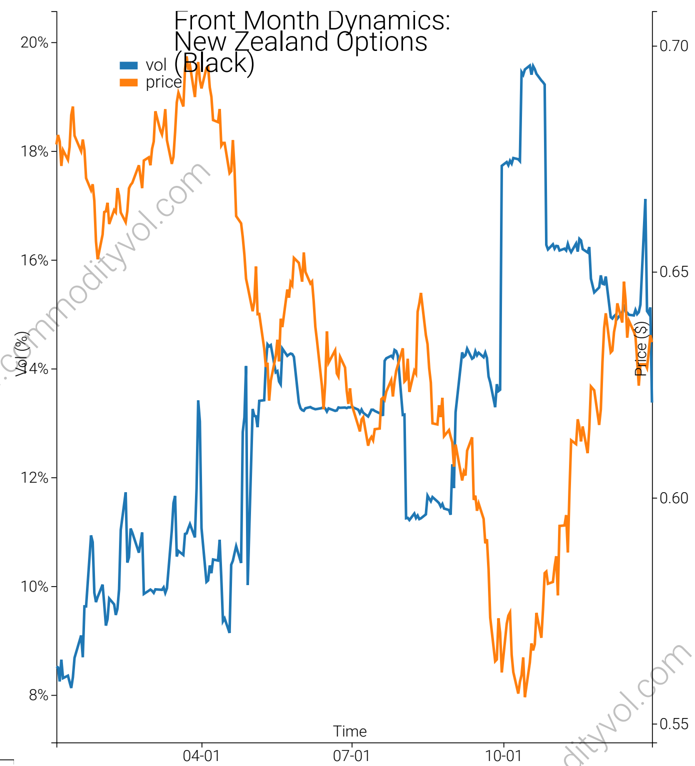

Termstructure Evolution:
BRLUSD Monthly Options
(Black)
Vol (%)
Today 2022-12-30
20230201
Start 2022-01-03
Time to Expiry (Yrs)
0.00
0.05
0.10
0.15
0%
10%
20%
30%
40%
50%
60%

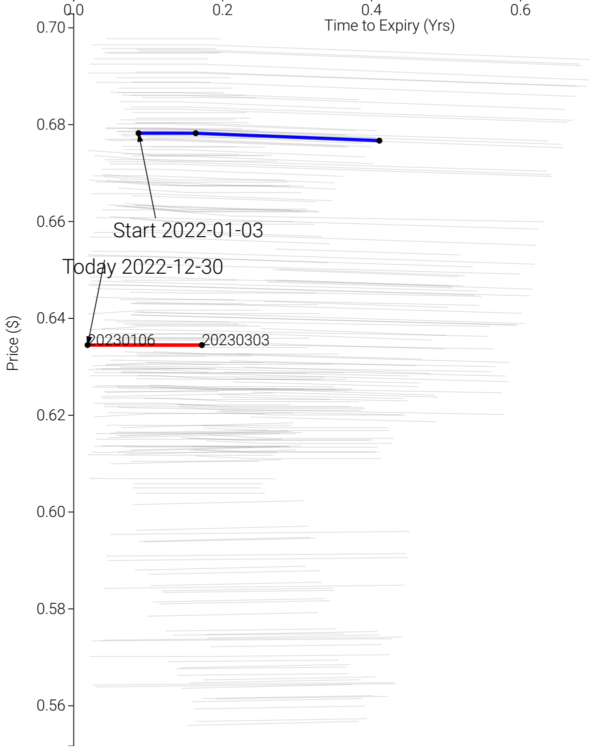

Front Month Dynamics:
BRLUSD Monthly Options
(Black)
vol
price
Vol (%)
Price ($)
Time
04-01
07-01
10-01
15%
20%
25%
30%
35%
0.17
0.18
0.19
0.20
0.21
0.22

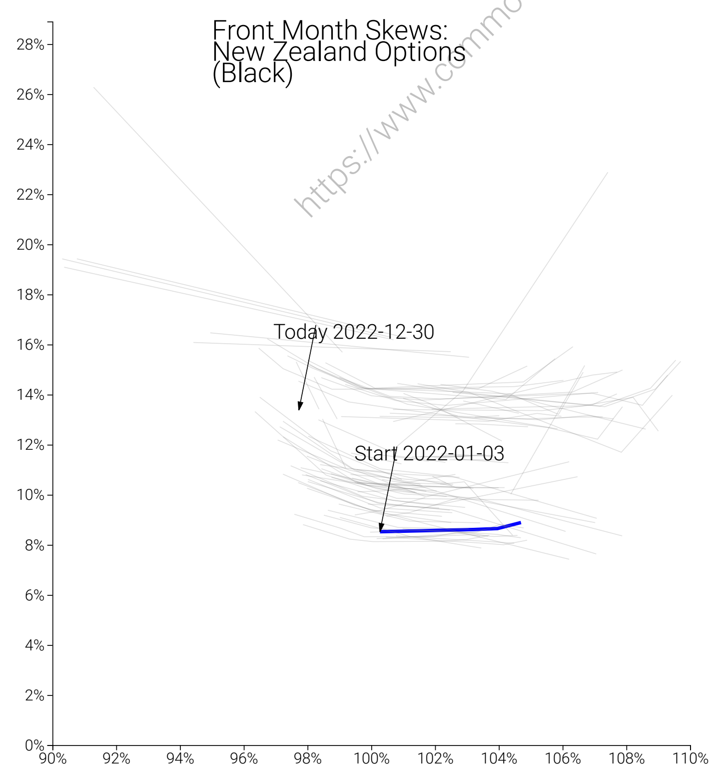

Price ($)
Today 2022-12-30
20230201
0.18
0.19
0.20
0.21

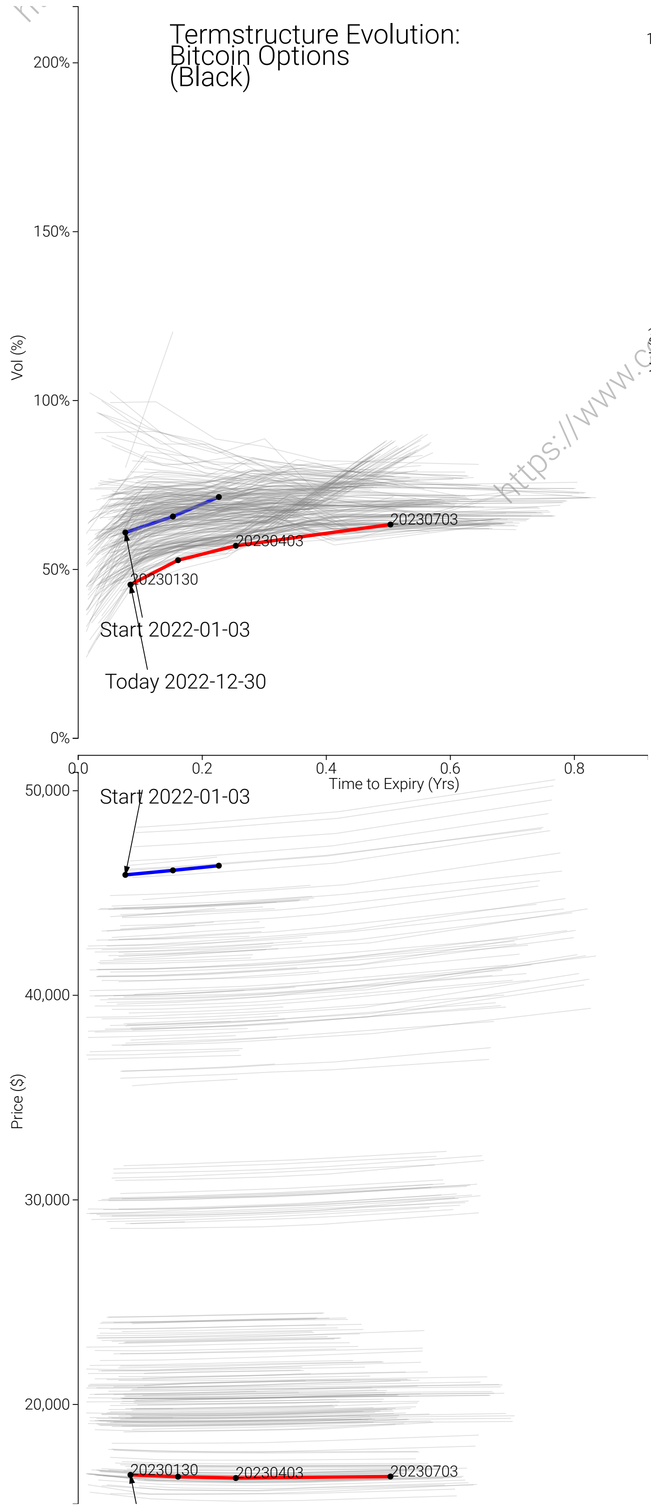

Front Month Skews:
BRLUSD Monthly Options
(Black)
Today 2022-12-30
Start 2022-01-03
0%
5%
10%
15%
20%
25%
30%
35%
40%
86%
88%
90%
92%
94%
96%
98%
100%
102%
104%
106%
108%
110%

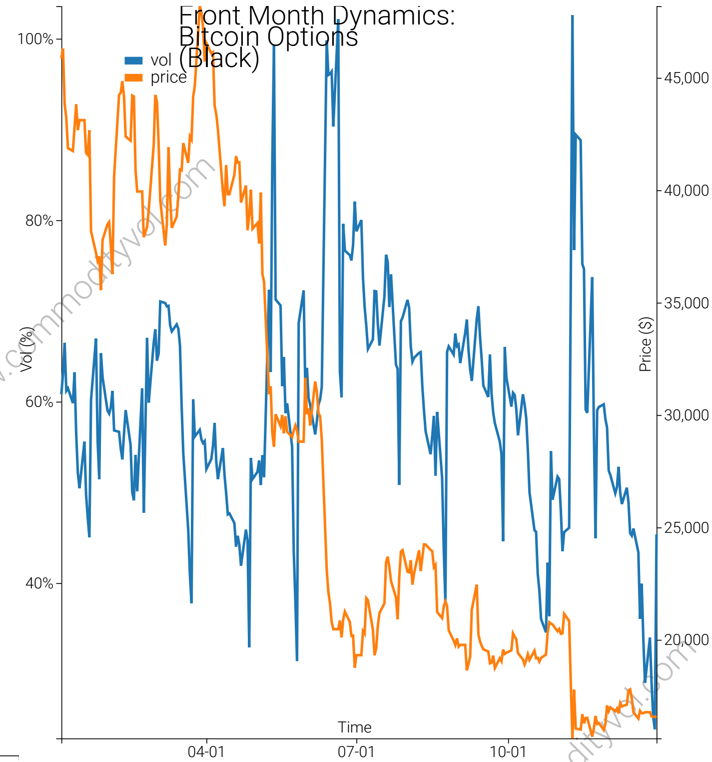

Termstructure Evolution:
New Zealand Options
(Black)
Vol (%)
30%
25%
20%
15%
10%
5%
0%
Today 2022-12-30
20230106
20230303
Start 2022-01-03
0.0
0.2
0.4
0.6
Time to Expiry (Yrs)
https://www.commodityvol.com

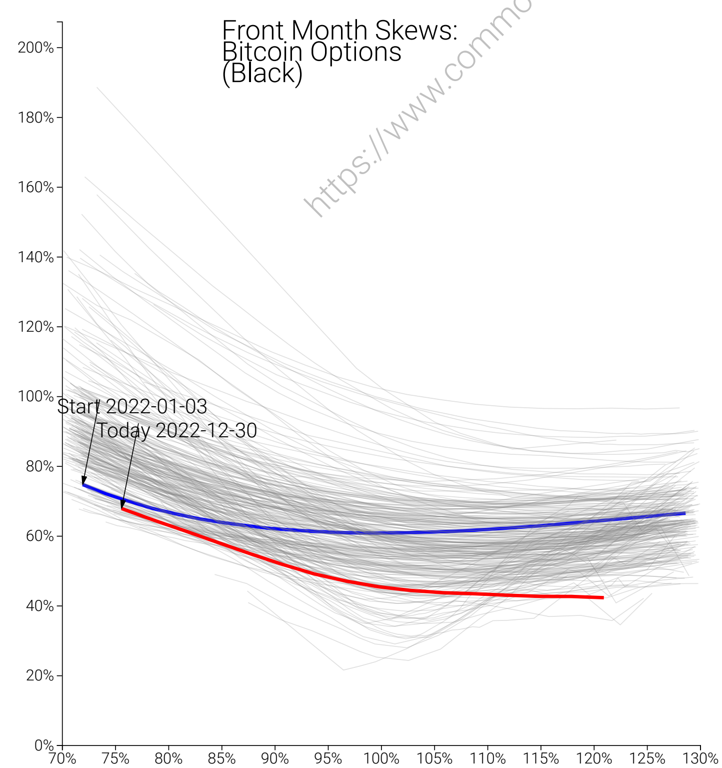

Front Month Dynamics:
New Zealand Options
(Black)
vol
price
Vol (%)
Price ($)
20%
18%
16%
14%
12%
10%
8%
0.70
0.65
0.60
0.55
Time
04-01
07-01
10-01
https://www.commodityvol.com

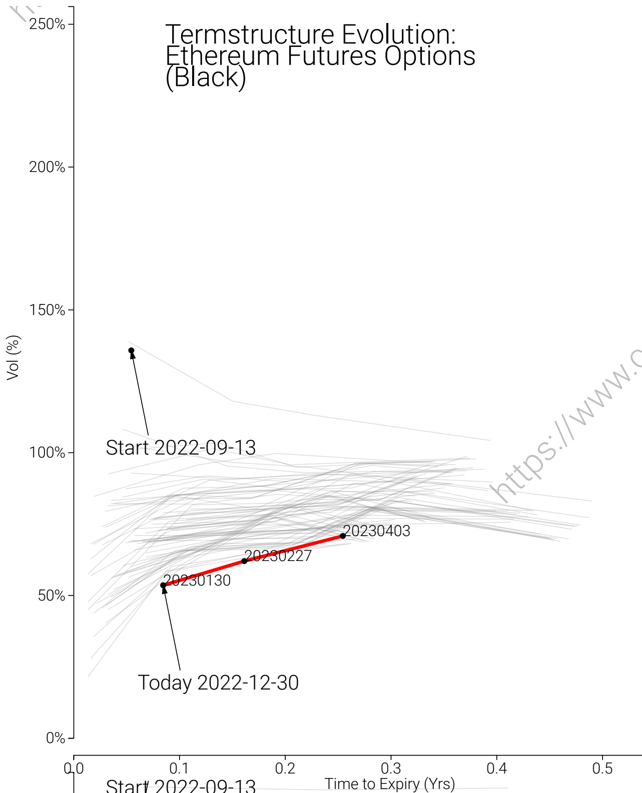

Price ($)
0.70
0.68
0.66
0.64
0.62
0.60
0.58
0.56
Start 2022-01-03
Today 2022-12-30
20230106
20230303

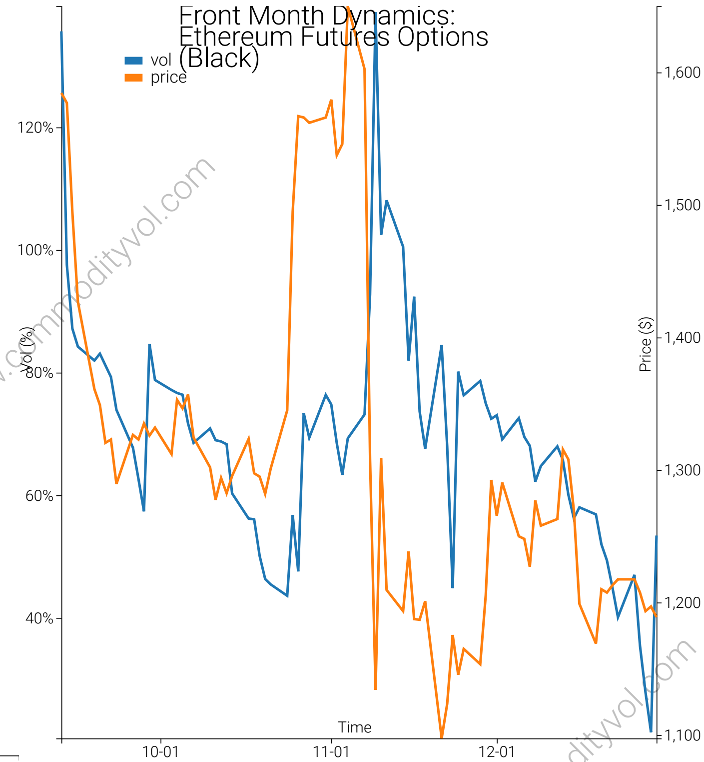

Front Month Skews:
New Zealand Options
(Black)
28%
26%
24%
22%
20%
18%
16%
14%
12%
10%
8%
6%
4%
2%
0%
Today 2022-12-30
Start 2022-01-03
90%
92%
94%
96%
98%
100%
102%
104%
106%
108%
110%
https://www.commodityvol.com

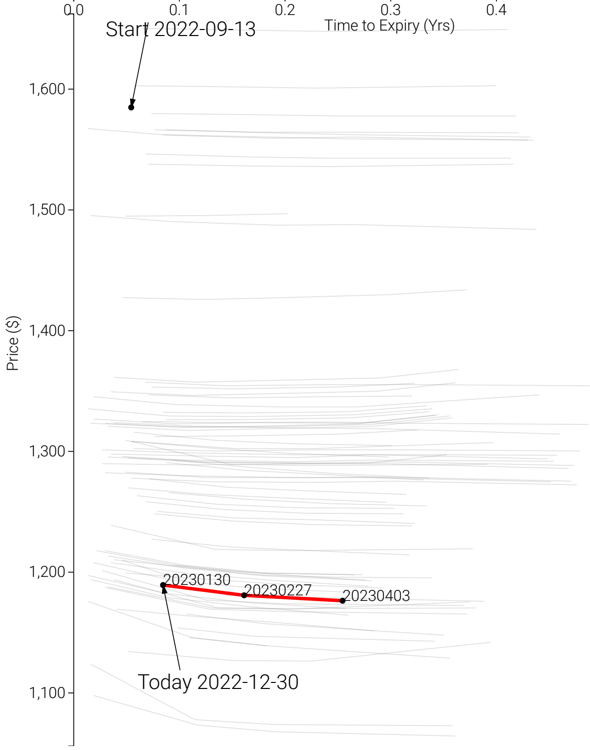

Termstructure Evolution:
Bitcoin Options
(Black)
Vol (%)
200%
150%
100%
50%
0%
20230130
20230403
20230703
Start 2022-01-03
Today 2022-12-30
0.0
0.2
0.4
0.6
0.8
Time to Expiry (Yrs)
Price ($)
50,000
40,000
30,000
20,000
Start 2022-01-03
20230130
20230403
20230703

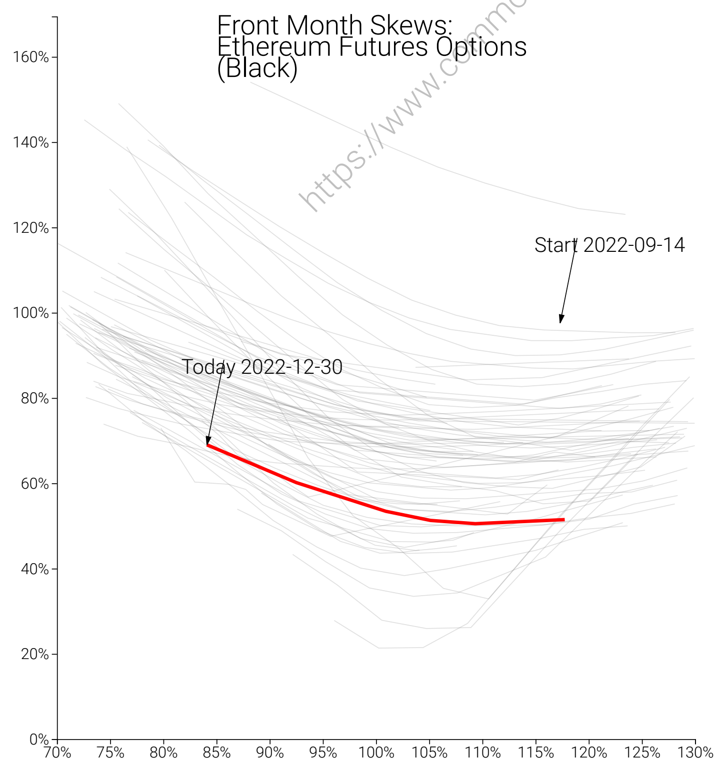

Front Month Dynamics:
Bitcoin Options
(Black)
vol
price
Vol (%)
100%
80%
60%
40%
Price ($)
45,000
40,000
35,000
30,000
25,000
20,000
Time
04-01
07-01
10-01


Front Month Skews:
Bitcoin Options
(Black)
200%
180%
160%
140%
120%
100%
80%
60%
40%
20%
0%
Start 2022-01-03
Today 2022-12-30
70%
75%
80%
85%
90%
95%
100%
105%
110%
115%
120%
125%
130%

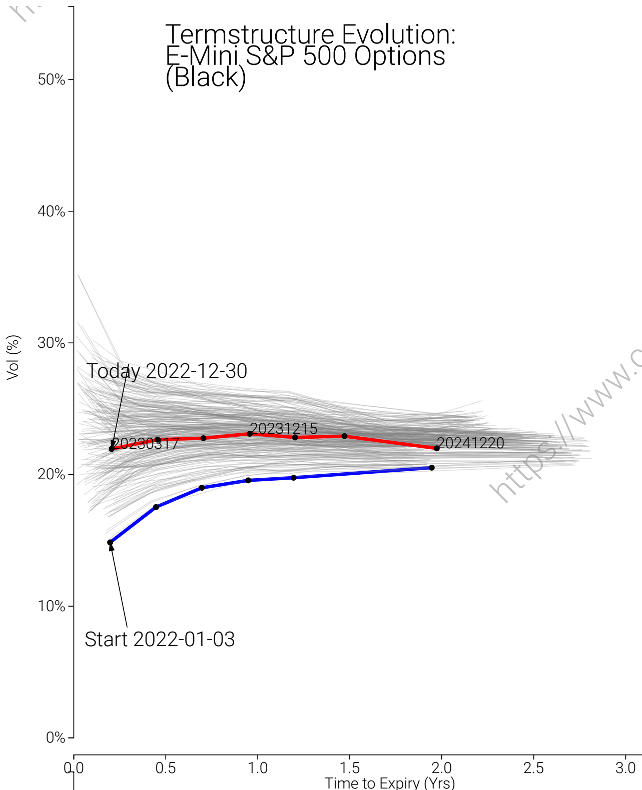

Termstructure Evolution:
Ethereum Futures Options
(Black)
Vol (%)
250%
200%
150%
100%
50%
0%
Start 2022-09-13
20230403
20230227
20230130
Today 2022-12-30
0.0
0.1
0.2
0.3
0.4
0.5
Time to Expiry (Yrs)

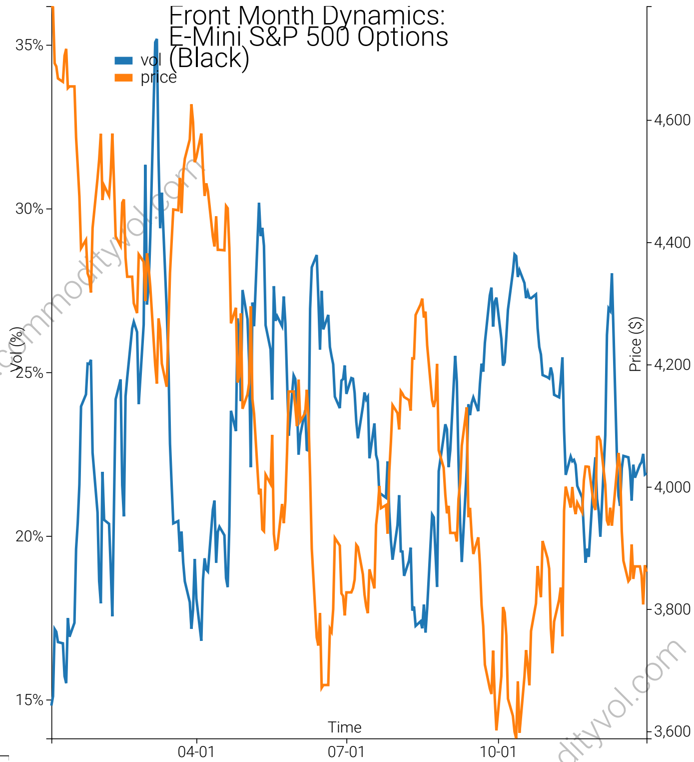

Front Month Dynamics:
Ethereum Futures Options
(Black)
vol
price
Vol (%)
120%
100%
80%
60%
40%
Price ($)
1,600
1,500
1,400
1,300
1,200
1,100
10-01
11-01
12-01
Time
https://www.commodityvol.com

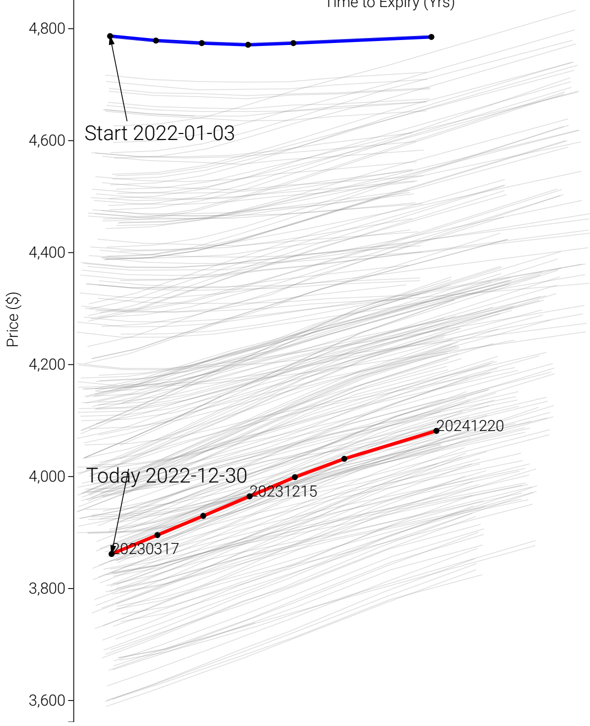

Start 2022-09-13
Price ($)
1,600
1,500
1,400
1,300
1,200
1,100
20230130
20230227
20230403
Today 2022-12-30

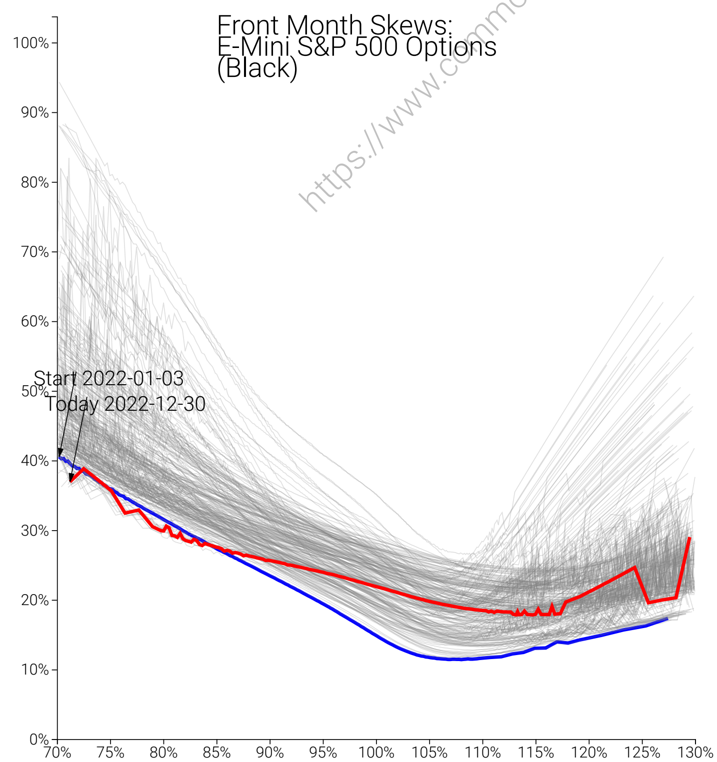

Front Month Skews:
Ethereum Futures Options
(Black)
160%
140%
120%
100%
80%
60%
40%
20%
0%
Start 2022-09-14
Today 2022-12-30
70%
75%
80%
85%
90%
95%
100%
105%
110%
115%
120%
125%
130%
https://www.commodityvol.com

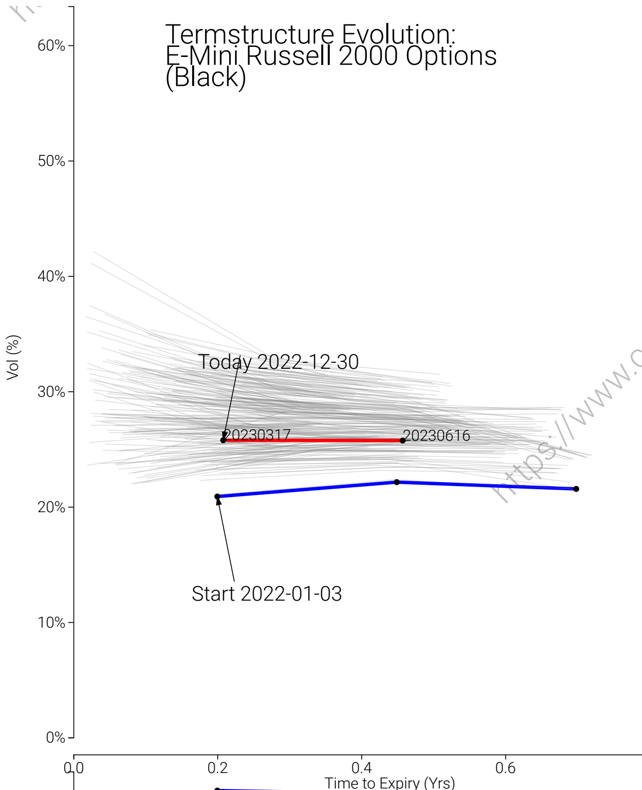
EquityIndex


Termstructure Evolution:
E-Mini S&P 500 Options
(Black)
Vol (%)
Today 2022-12-30
Start 2022-01-03
20230317
20231215
20241220
Time to Expiry (Yrs)

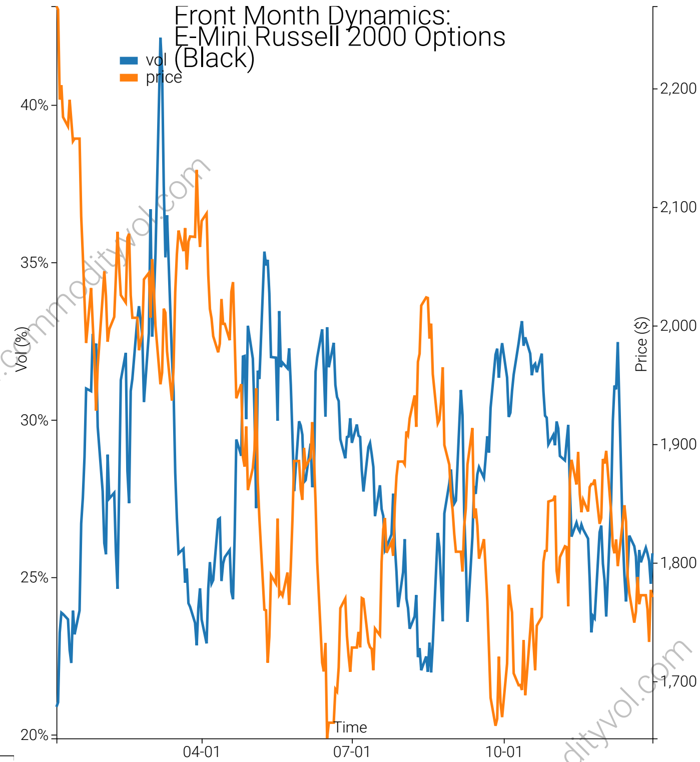

Front Month Dynamics:
E-Mini S&P 500 Options
(Black)
vol
price
Vol (%)
Price ($)
Time
04-01
07-01
10-01


Price ($)
Start 2022-01-03
Today 2022-12-30
20230317
20231215
20241220

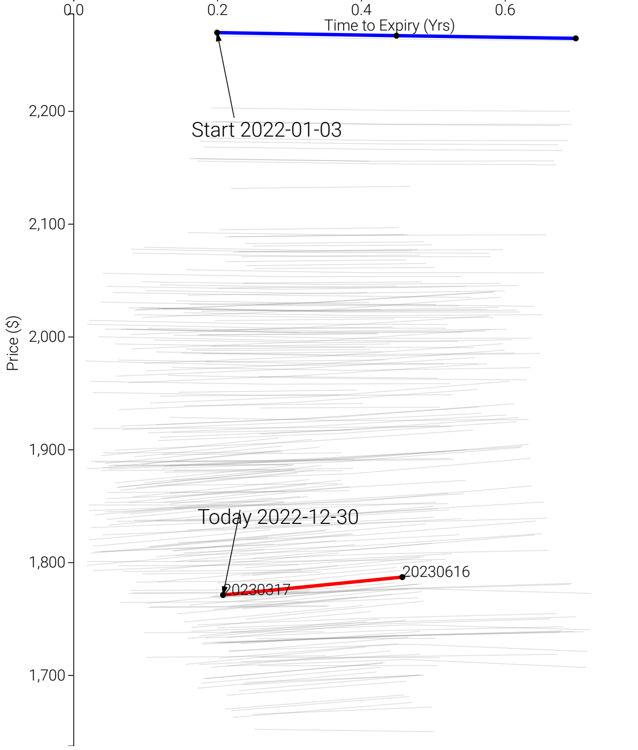

Front Month Skews:
E-Mini S&P 500 Options
(Black)
Start 2022-01-03
Today 2022-12-30



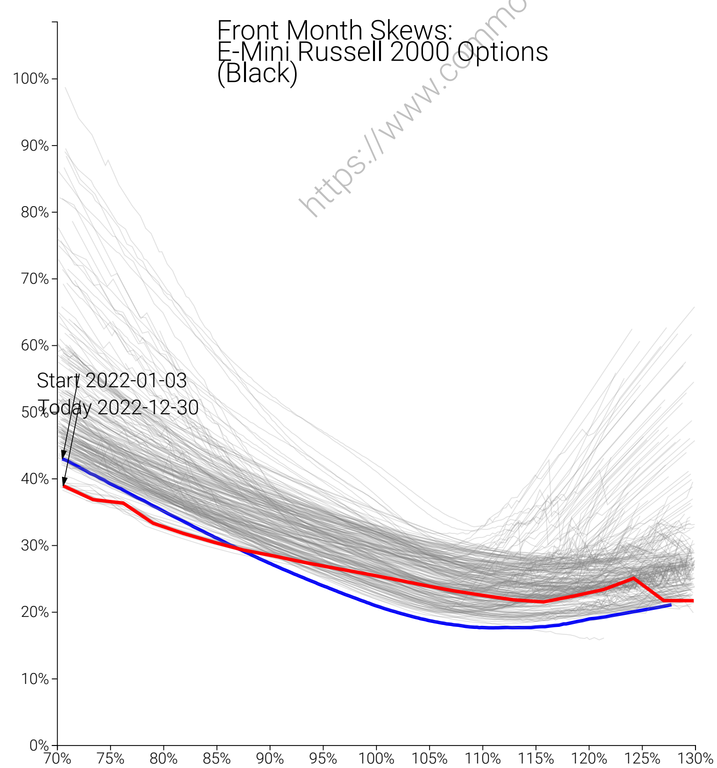
Termstructure Evolution:
E-Mini Russell 2000 Options
(Black)
Vol (%)
Today 2022-12-30
20230317
20230616
Start 2022-01-03
Time to Expiry (Yrs)



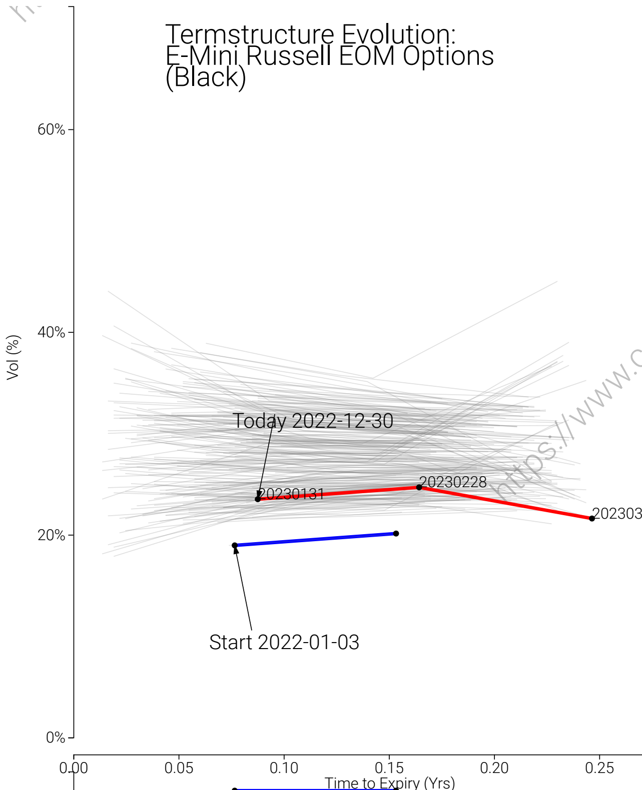
Front Month Dynamics:
E-Mini Russell 2000 Options
(Black)
vol
price
Vol (%)
Price ($)
Time
04-01
07-01
10-01

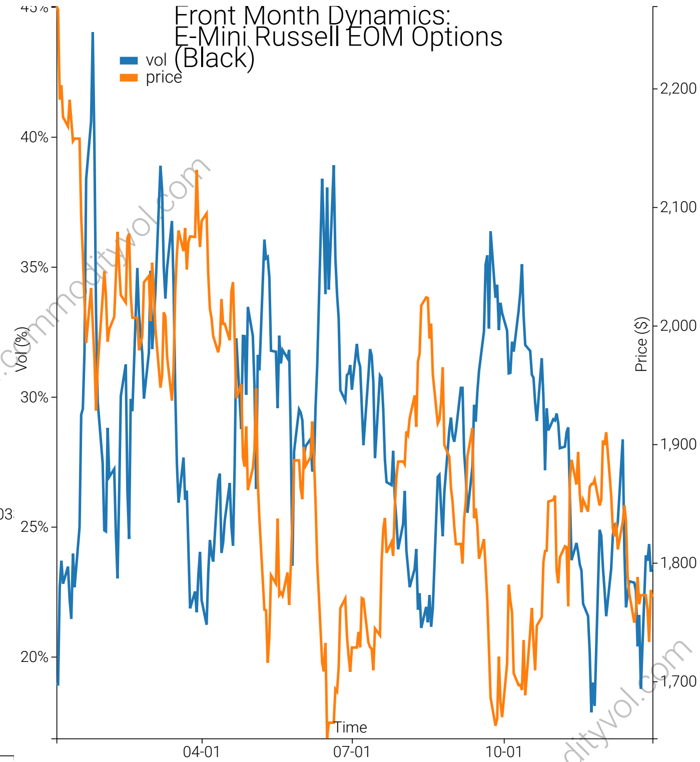


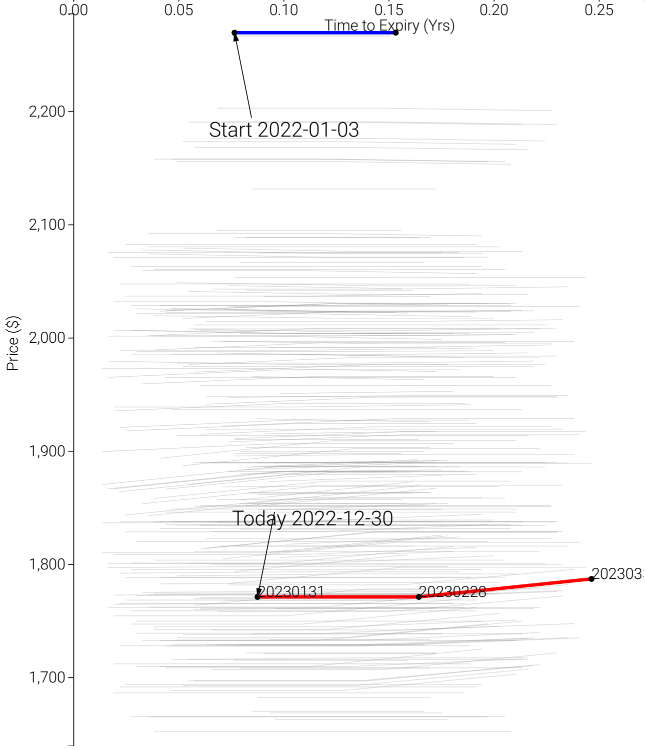
Price ($)
Start 2022-01-03
Today 2022-12-30
20230317
20230616

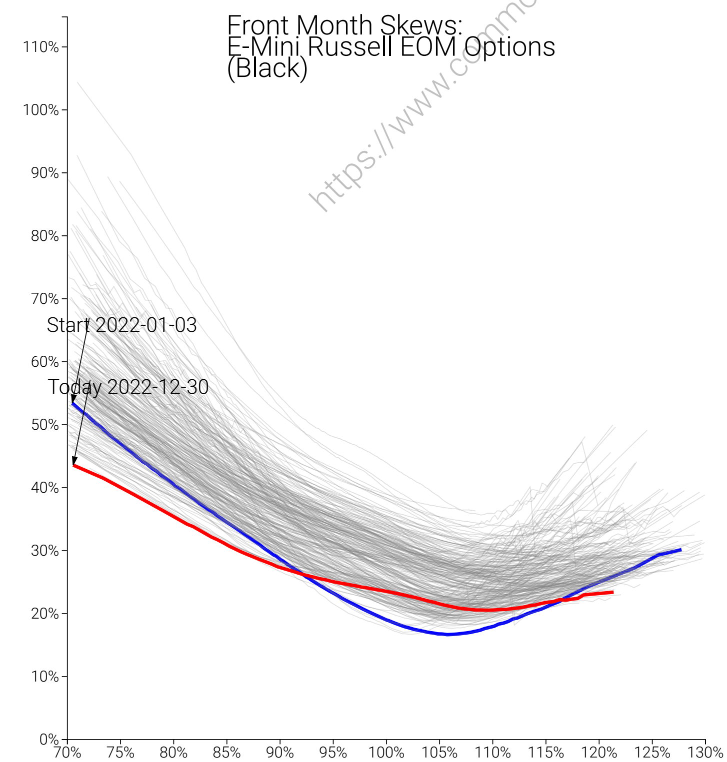


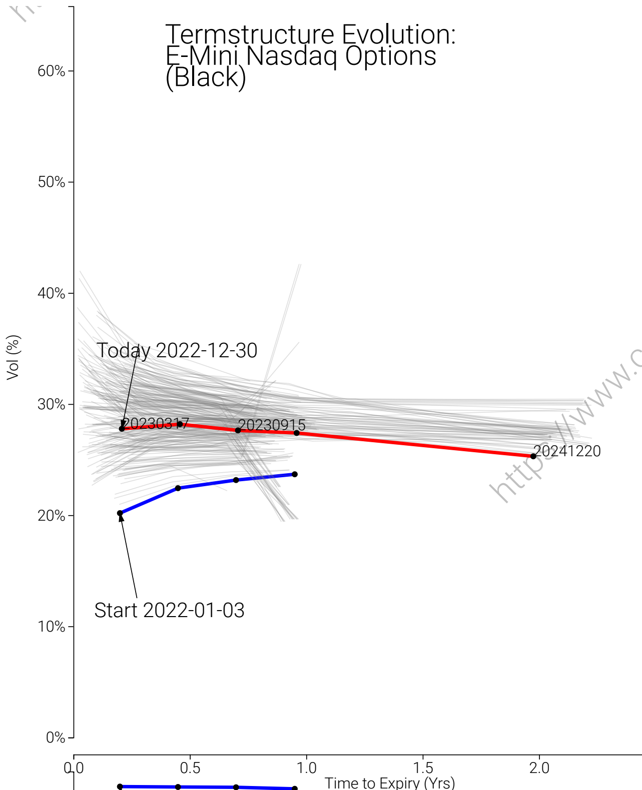
Front Month Skews:
E-Mini Russell 2000 Options
(Black)
Start 2022-01-03
Today 2022-12-30


Termstructure Evolution:
E-Mini Russell EOM Options
(Black)
Vol (%)
60%
40%
20%
0%
Today 2022-12-30
20230131
20230228
202303
Start 2022-01-03
0.00
0.05
0.10
0.15
0.20
0.25
Time to Expiry (Yrs)

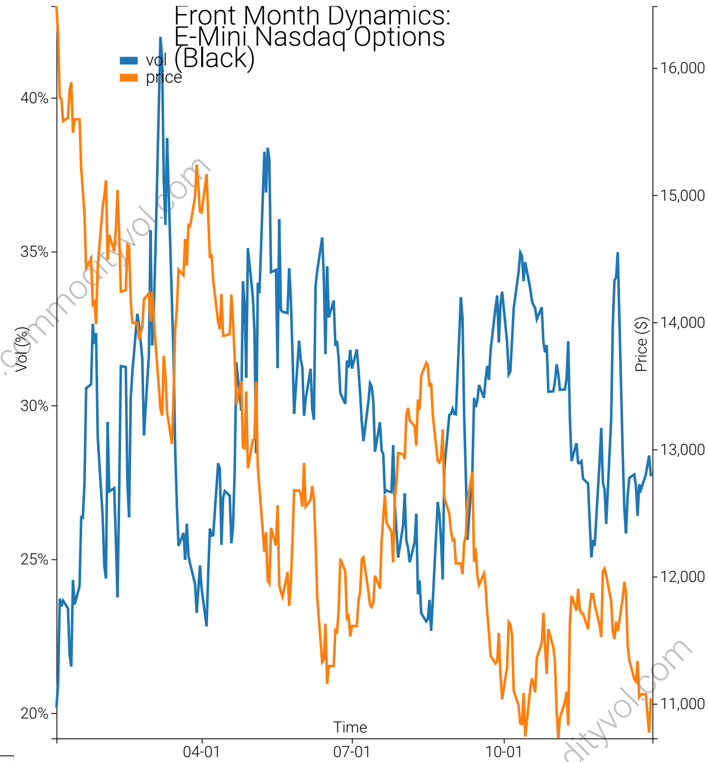

Front Month Dynamics:
E-Mini Russell EOM Options
(Black)
vol
price
40%
35%
30%
25%
20%
Vol (%)
Price ($)
2,200
2,100
2,000
1,900
1,800
1,700
Time
04-01
07-01
10-01


Price ($)
2,200
2,100
2,000
1,900
1,800
1,700
Start 2022-01-03
Today 2022-12-30
20230131
20230228
202303

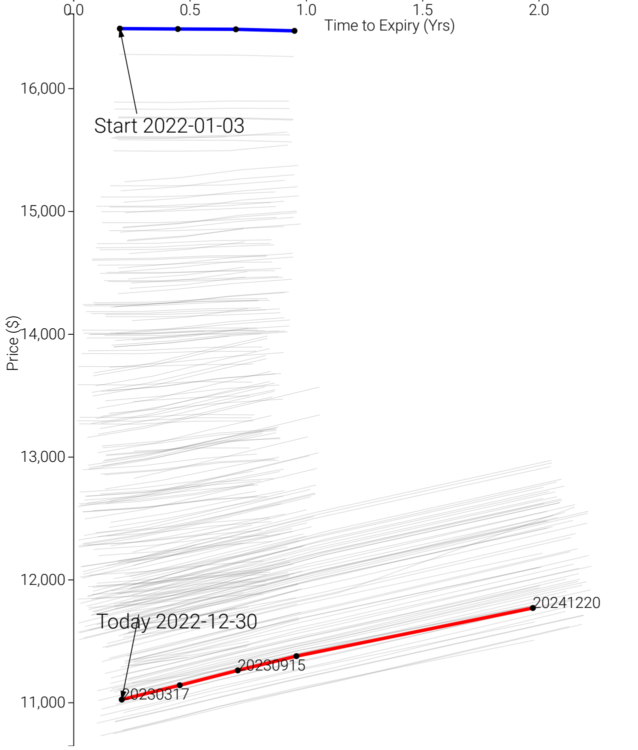

Front Month Skews:
E-Mini Russell EOM Options
(Black)
110%
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
Start 2022-01-03
Today 2022-12-30
70%
75%
80%
85%
90%
95%
100%
105%
110%
115%
120%
125%
130%



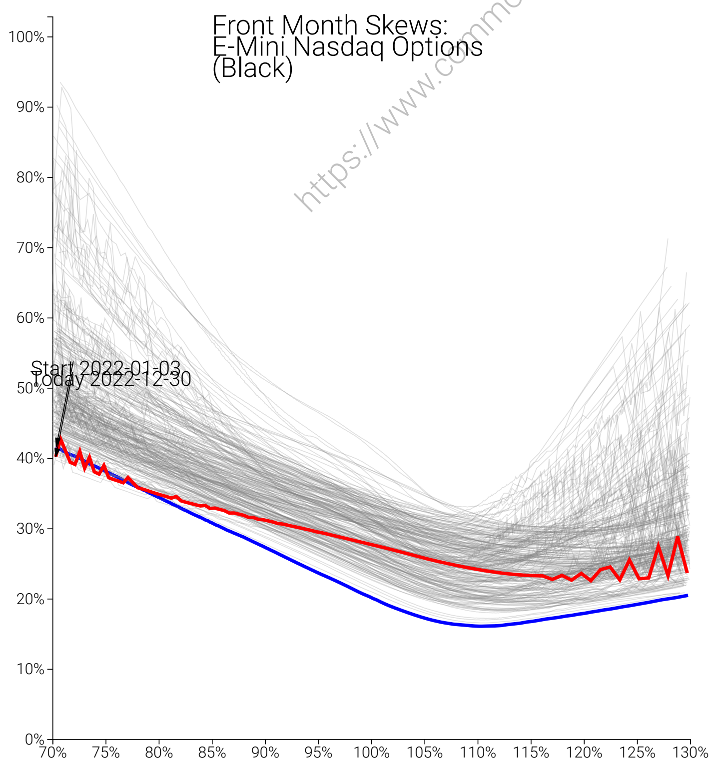
Termstructure Evolution:
E-Mini Nasdaq Options
(Black)
Vol (%)
Today 2022-12-30
Start 2022-01-03
20230317
20230915
20241220
0%
10%
20%
30%
40%
50%
60%
0.0
0.5
1.0
1.5
2.0
Time to Expiry (Yrs)



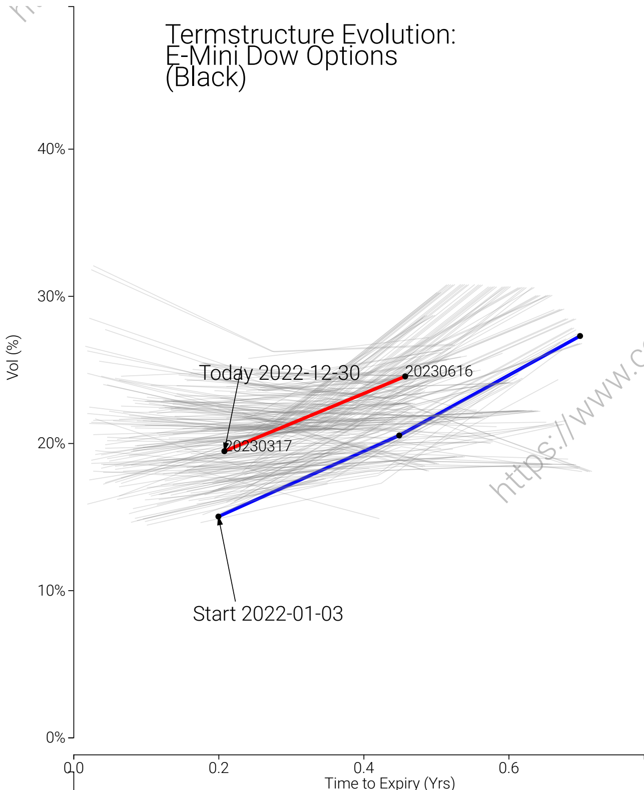
Front Month Dynamics:
E-Mini Nasdaq Options
(Black)
vol
price
Vol (%)
Price ($)
20%
25%
30%
35%
40%
11,000
12,000
13,000
14,000
15,000
16,000
Time
04-01
07-01
10-01

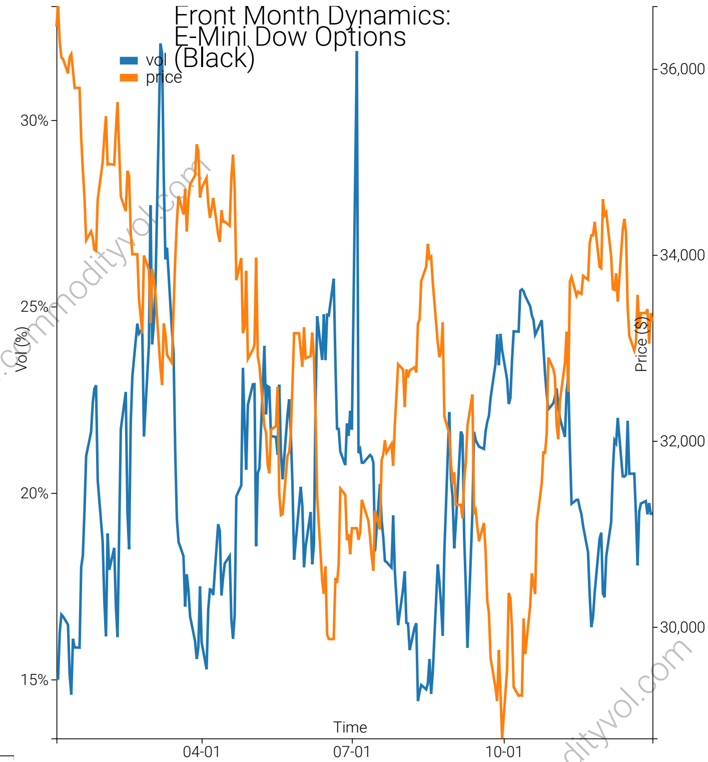


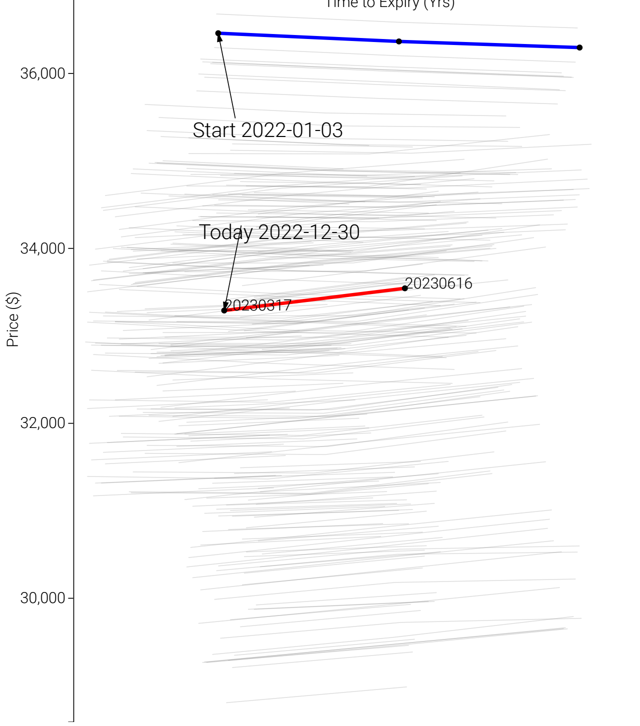
Price ($)
Start 2022-01-03
Today 2022-12-30
20230317
20230915
20241220
11,000
12,000
13,000
14,000
15,000
16,000

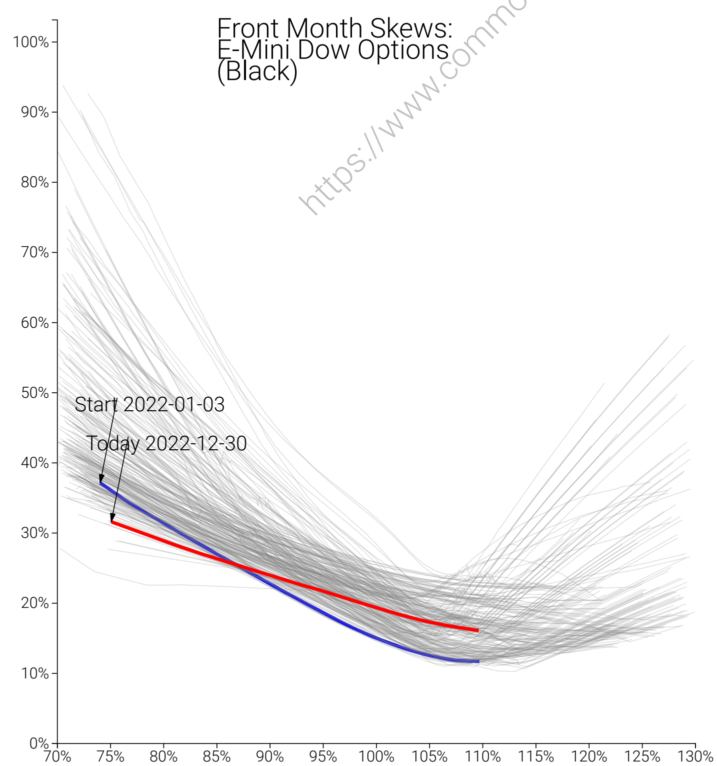


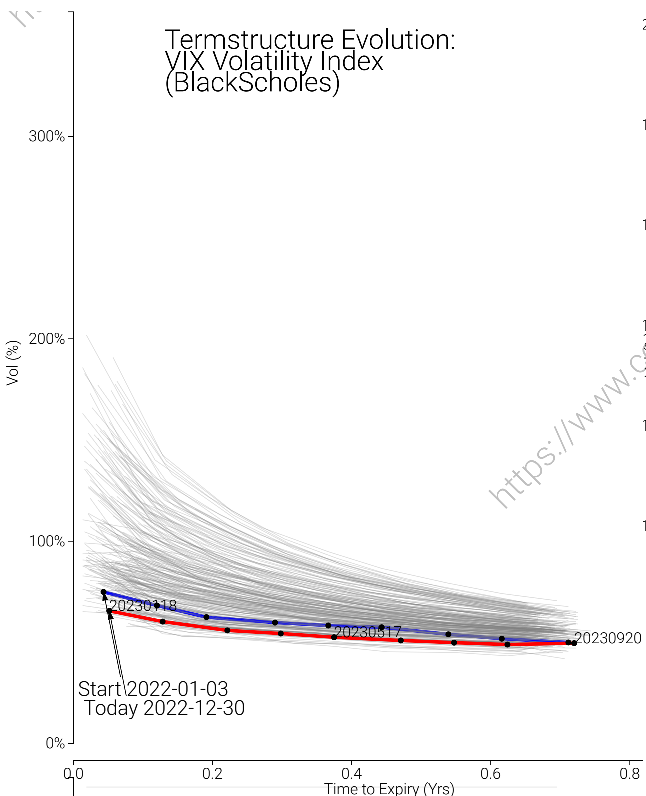
Front Month Skews:
E-Mini Nasdaq Options
(Black)
Start 2022-01-03
Today 2022-12-30
0%
10%
20%
30%
40%
50%
60%
70%
80%
90%
100%
70%
75%
80%
85%
90%
95%
100%
105%
110%
115%
120%
125%
130%

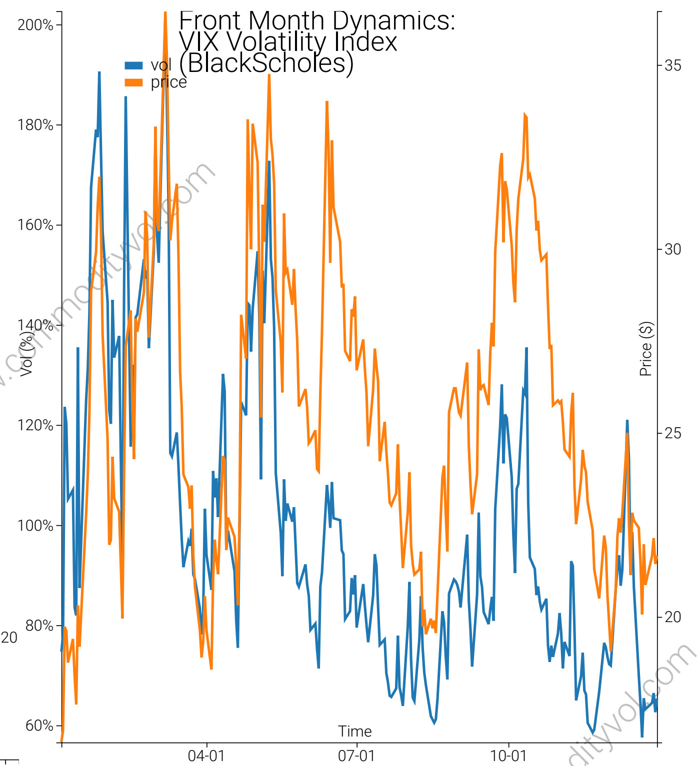

Termstructure Evolution:
E-Mini Dow Options
(Black)
Vol (%)
Time to Expiry (Yrs)
Today 2022-12-30
20230317
20230616
Start 2022-01-03

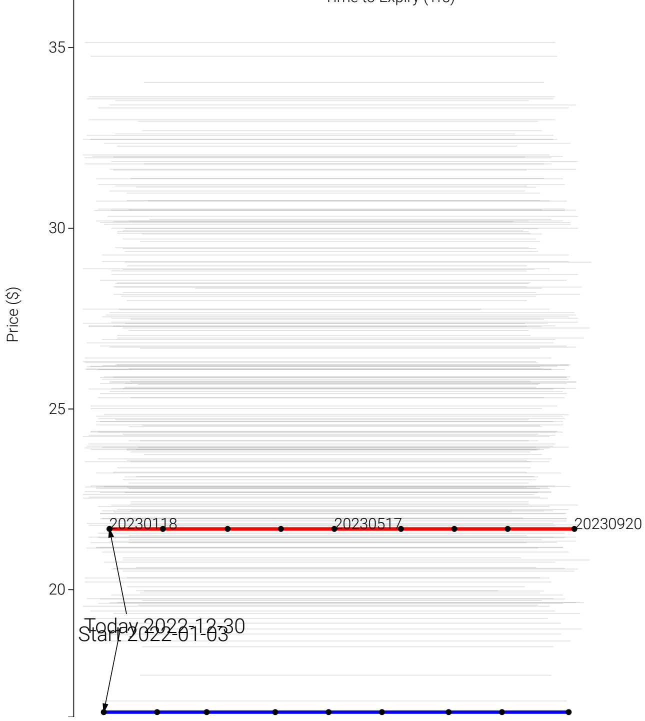

Front Month Dynamics:
E-Mini Dow Options
(Black)
vol
price
Vol (%)
Price ($)
Time
04-01
07-01
10-01

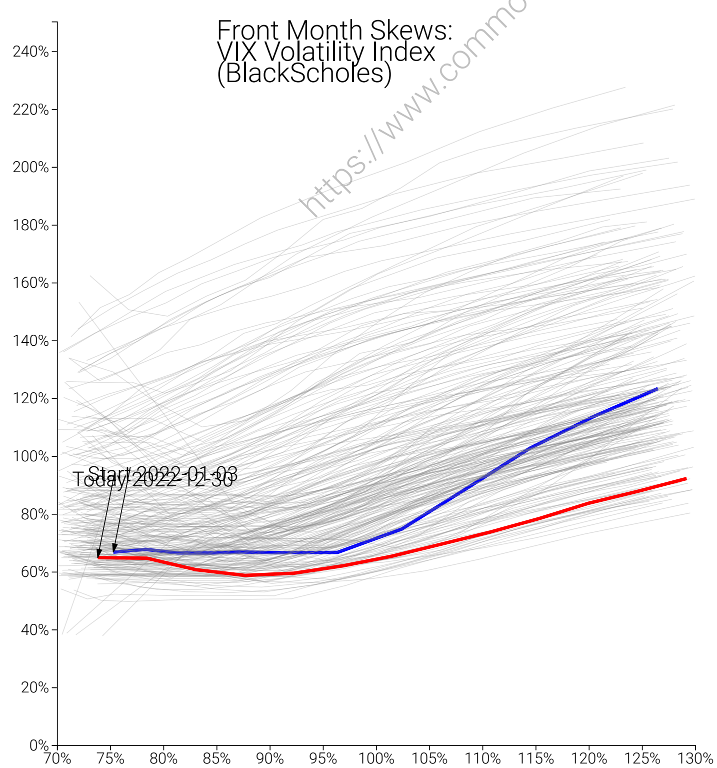

Price ($)
Start 2022-01-03
Today 2022-12-30
20230317
20230616


Front Month Skews:
E-Mini Dow Options
(Black)
Start 2022-01-03
Today 2022-12-30

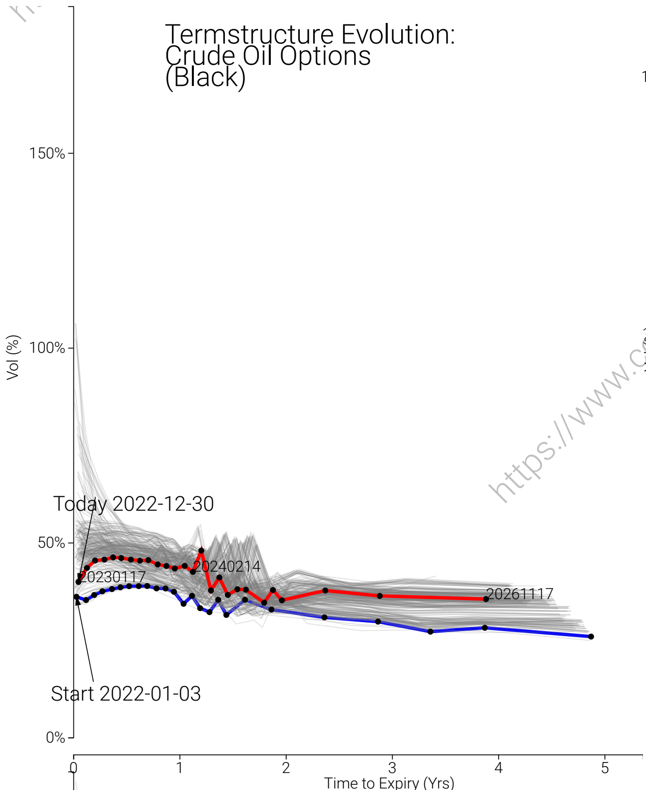

Termstructure Evolution:
VIX Volatility Index
(BlackScholes)
Vol (%)
300%
200%
100%
0%
20230118
20230517
20230920
Start 2022-01-03
Today 2022-12-30
0.0
0.2
0.4
0.6
0.8
Time to Expiry (Yrs)

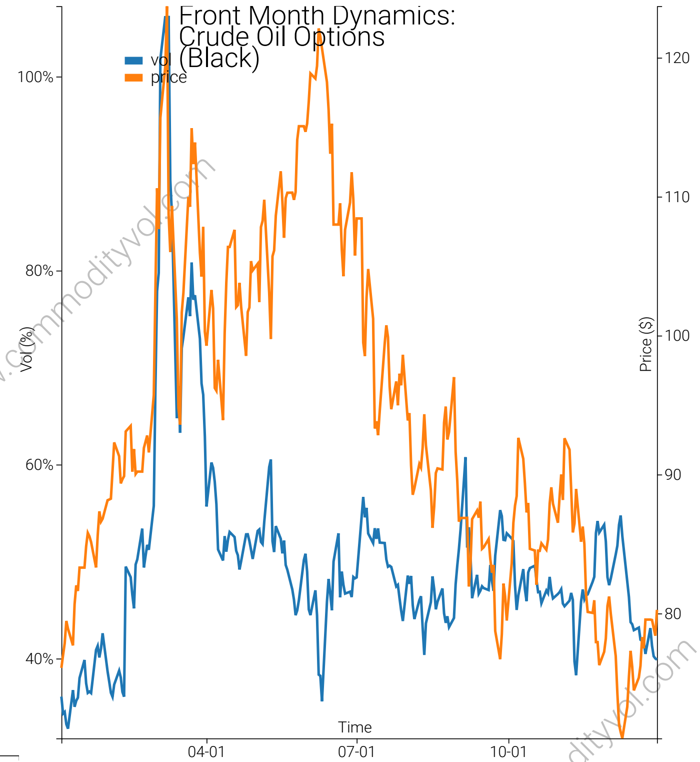

Front Month Dynamics:
VIX Volatility Index
(BlackScholes)
vol
price
Vol (%)
Price ($)
200%
180%
160%
140%
120%
100%
80%
60%
35
30
25
20
04-01
07-01
10-01
Time

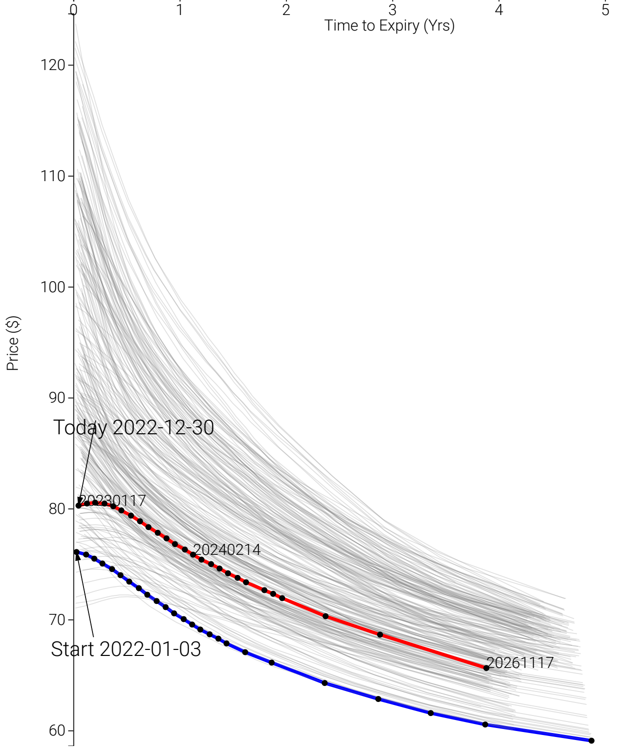

Price ($)
35
30
25
20
20230118
20230517
20230920
Today 2022-12-30
Start 2022-01-03

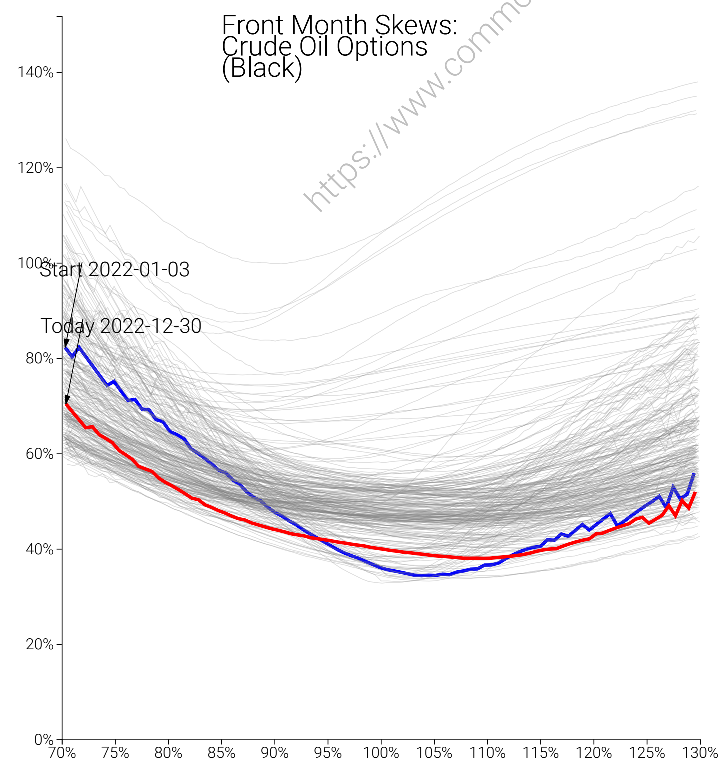

Front Month Skews:
VIX Volatility Index
(BlackScholes)
240%
220%
200%
180%
160%
140%
120%
100%
80%
60%
40%
20%
0%
Start 2022-01-03
Today 2022-12-30
70%
75%
80%
85%
90%
95%
100%
105%
110%
115%
120%
125%
130%

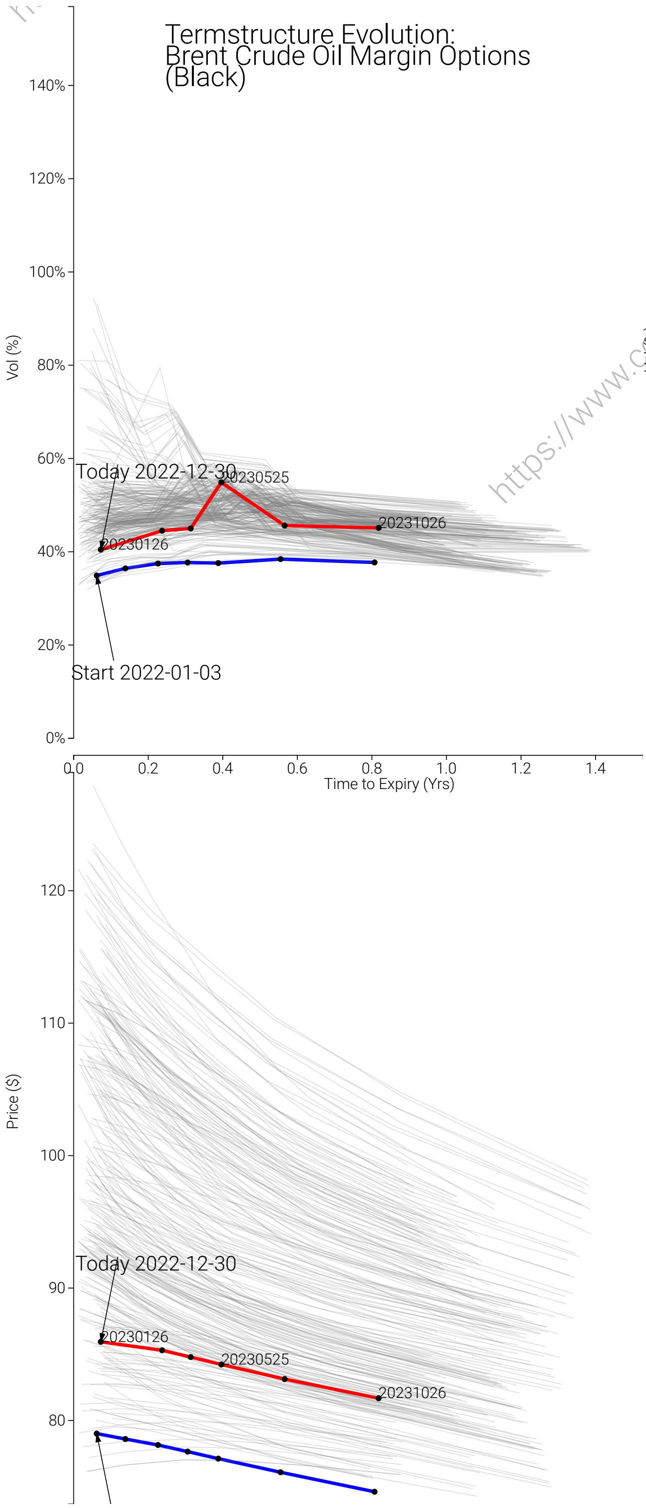
Energy: Crude and Derivatives

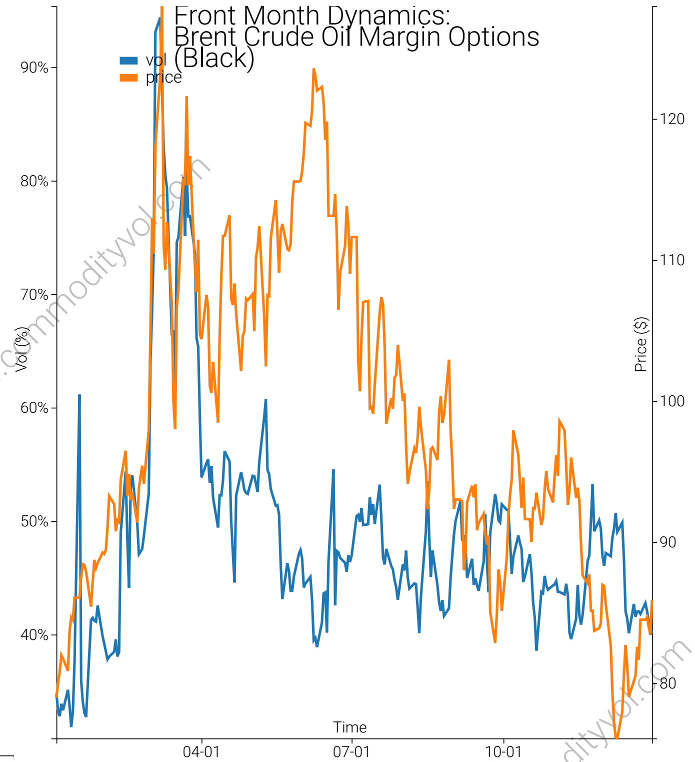

Termstructure Evolution:
Crude Oil Options
(Black)
Vol (%)
Today 2022-12-30
Start 2022-01-03
20230117
20240214
20261117
Time to Expiry (Yrs)

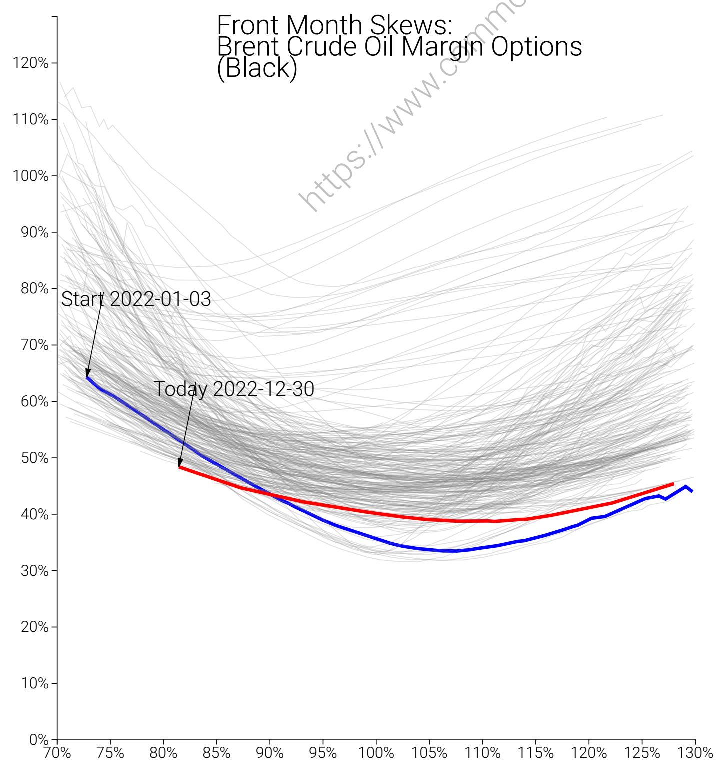

Front Month Dynamics:
Crude Oil Options
(Black)
vol
price
Vol (%)
Price ($)
Time
04-01
07-01
10-01

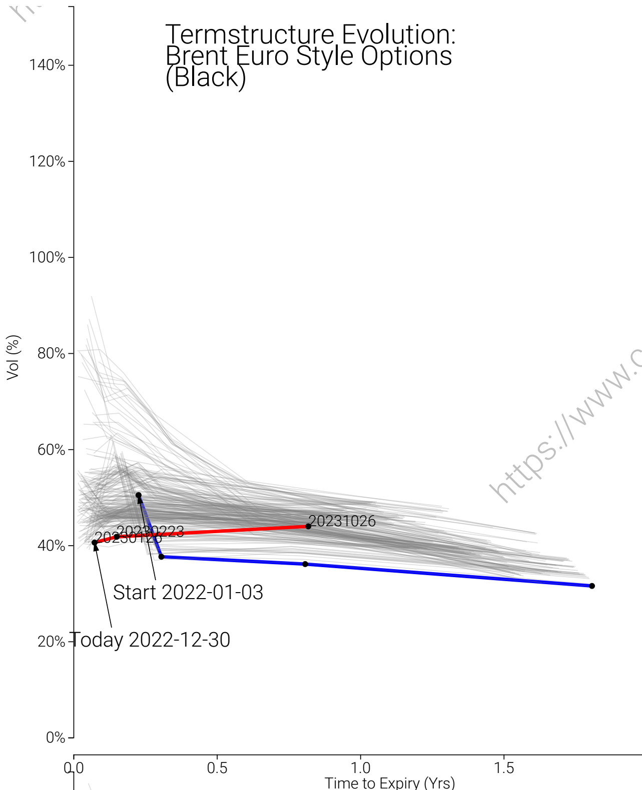

Price ($)
Today 2022-12-30
Start 2022-01-03
20230117
20240214
20261117


Front Month Skews:
Crude Oil Options
(Black)
Start 2022-01-03
Today 2022-12-30

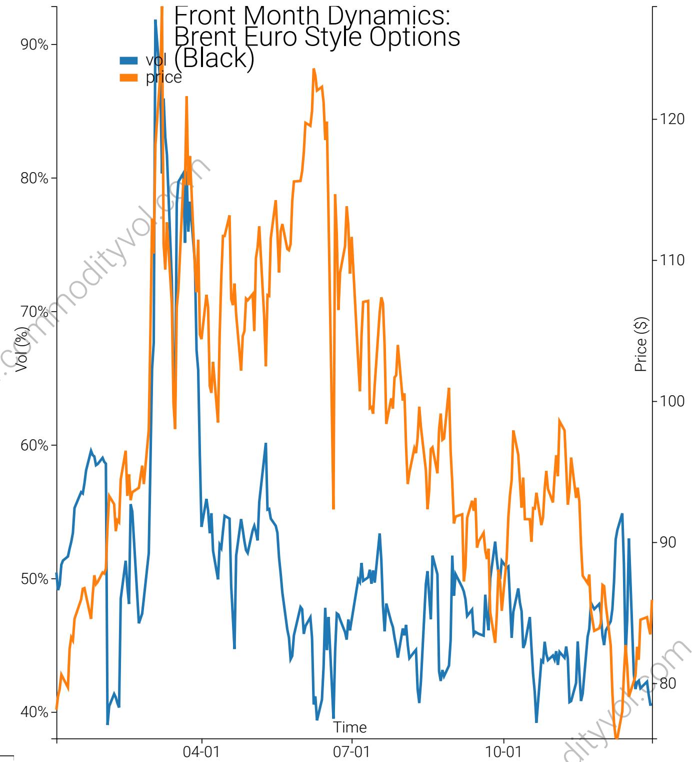

Termstructure Evolution:
Brent Crude Oil Margin Options
(Black)
Vol (%)
Time to Expiry (Yrs)
Today 2022-12-30
Start 2022-01-03
20230126
20230525
20231026
Price ($)


Front Month Dynamics:
Brent Crude Oil Margin Options
(Black)
vol
price
Vol (%)
Price ($)
Time
04-01
07-01
10-01

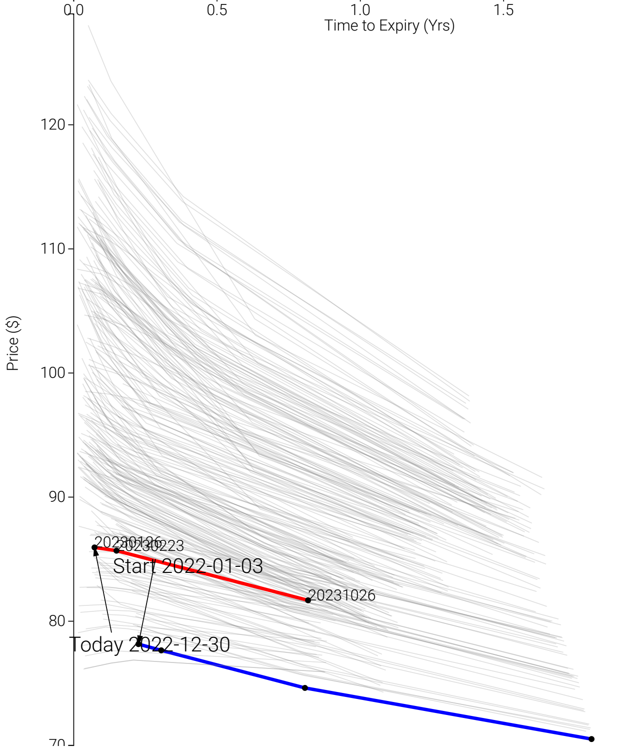

Front Month Skews:
Brent Crude Oil Margin Options
(Black)
Start 2022-01-03
Today 2022-12-30



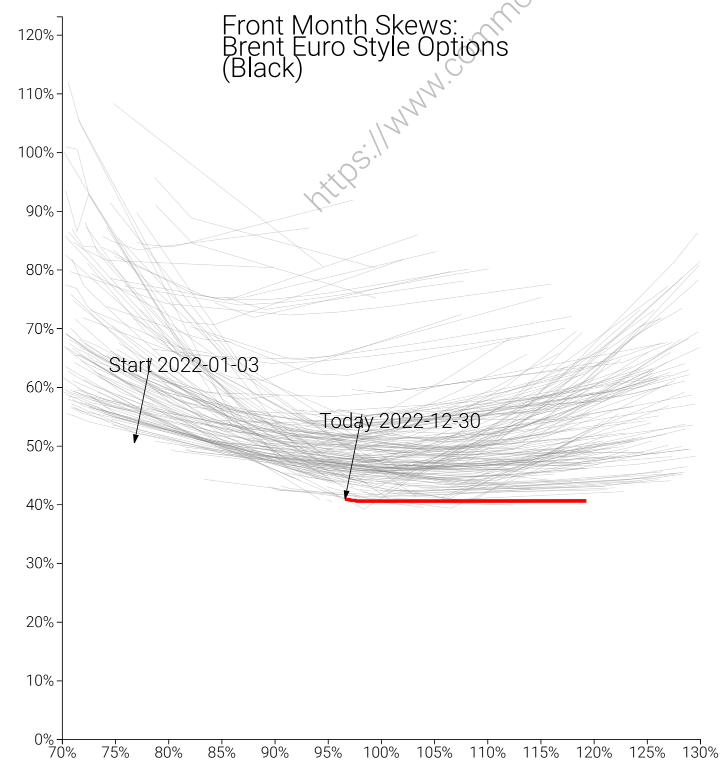
Termstructure Evolution:
Brent Euro Style Options
(Black)
Vol (%)
140%
120%
100%
80%
60%
40%
20%
0%
20230126
20230223
20231026
Start 2022-01-03
Today 2022-12-30
0.0
0.5
1.0
1.5
Time to Expiry (Yrs)



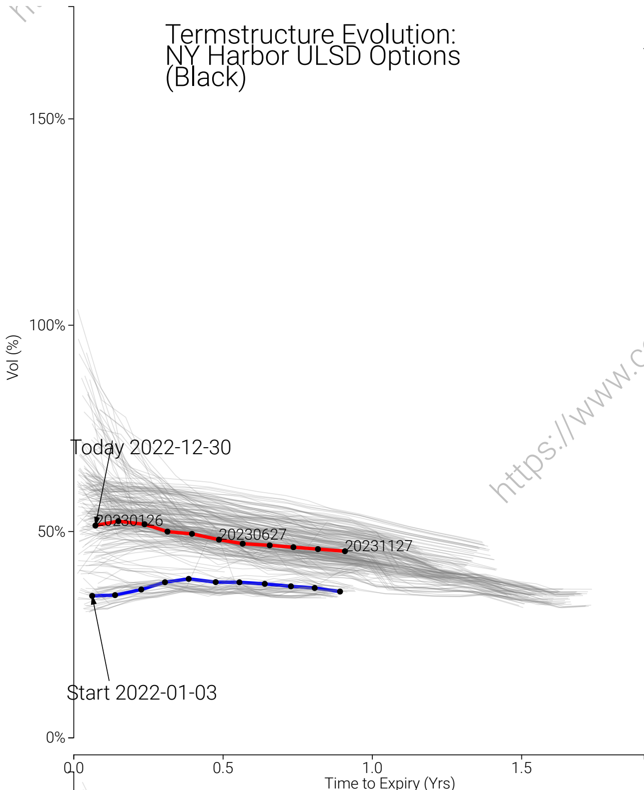
Front Month Dynamics:
Brent Euro Style Options
(Black)
vol
price
Vol (%)
Price ($)
90%
80%
70%
60%
50%
40%
120
110
100
90
80
Time
04-01
07-01
10-01



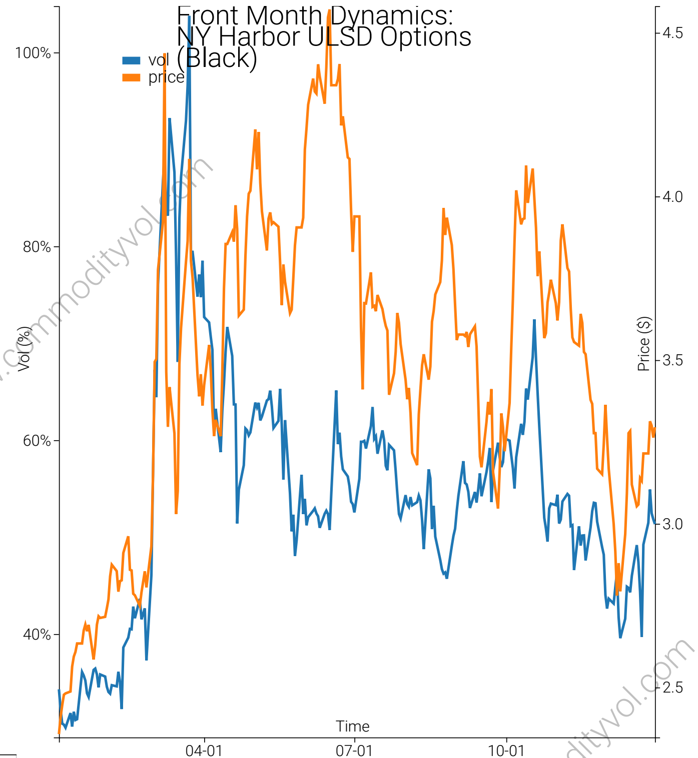
Price ($)
120
110
100
90
80
70
20230126
20230223
Start 2022-01-03
20231026
Today 2022-12-30



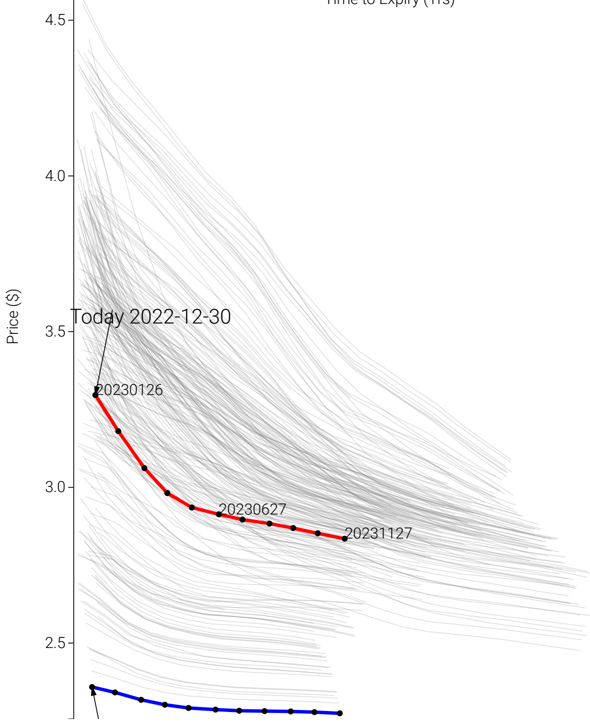
Front Month Skews:
Brent Euro Style Options
(Black)
120%
110%
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
Start 2022-01-03
Today 2022-12-30
70%
75%
80%
85%
90%
95%
100%
105%
110%
115%
120%
125%
130%



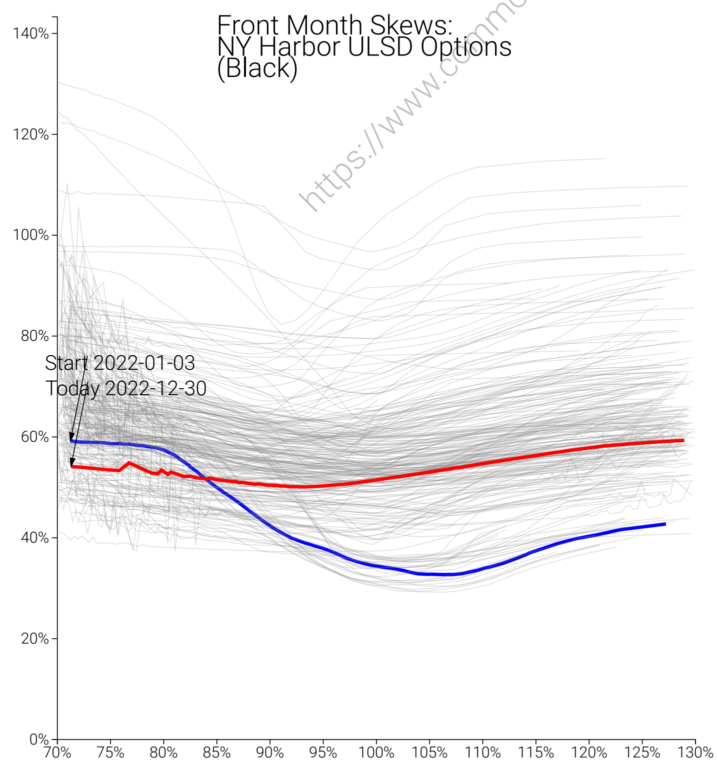
Termstructure Evolution:
NY Harbor ULSD Options
(Black)
Vol (%)
150%
100%
50%
0%
Today 2022-12-30
20230126
20230627
20231127
Start 2022-01-03
0.0
0.5
1.0
1.5
Time to Expiry (Yrs)
https://www.commodityvol.com



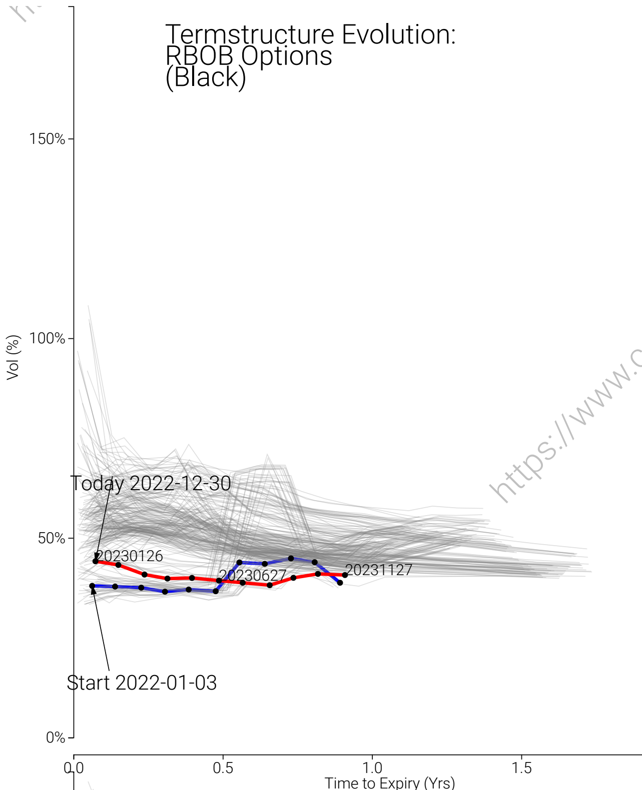
Front Month Dynamics:
NY Harbor ULSD Options
(Black)
vol
price
Vol (%)
100%
80%
60%
40%
Price ($)
4.5
4.0
3.5
3.0
2.5
04-01
07-01
10-01
Time
https://www.commodityvol.com

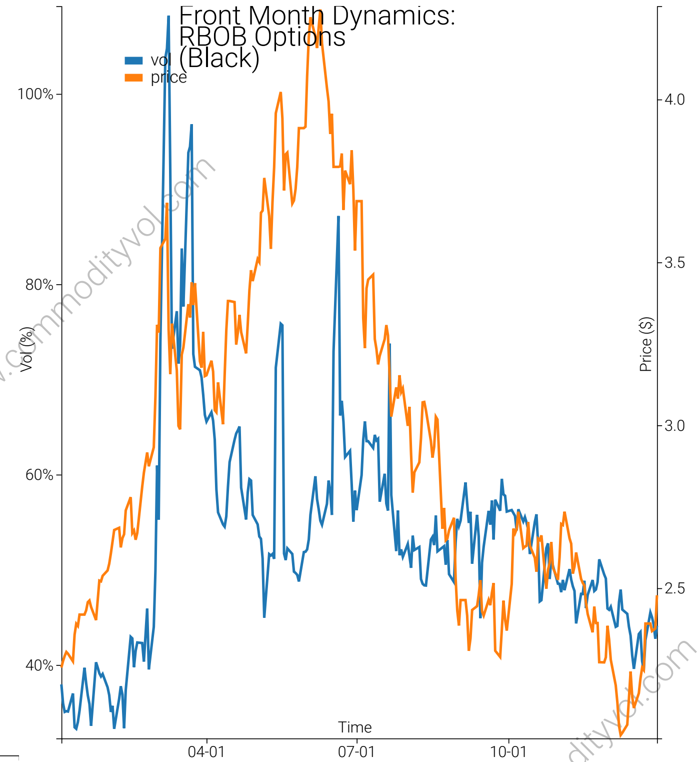


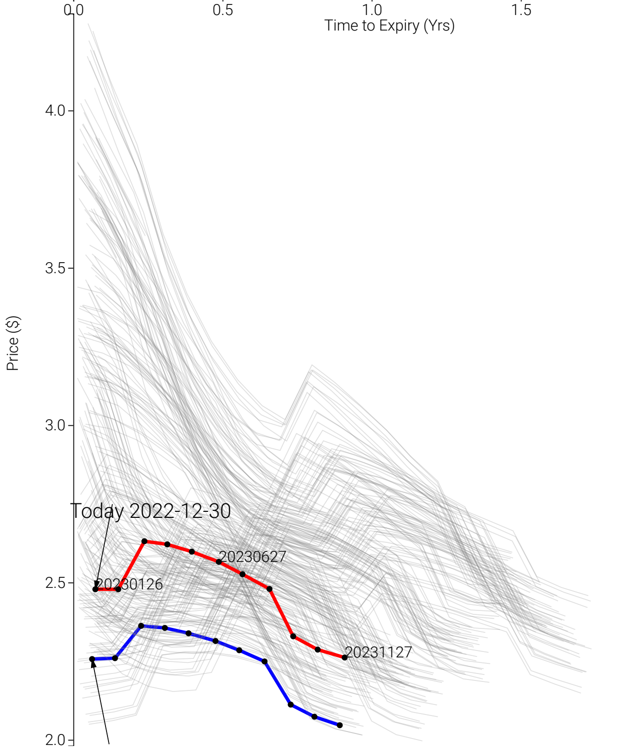
Price ($)
4.5
4.0
3.5
3.0
2.5
Today 2022-12-30
20230126
20230627
20231127

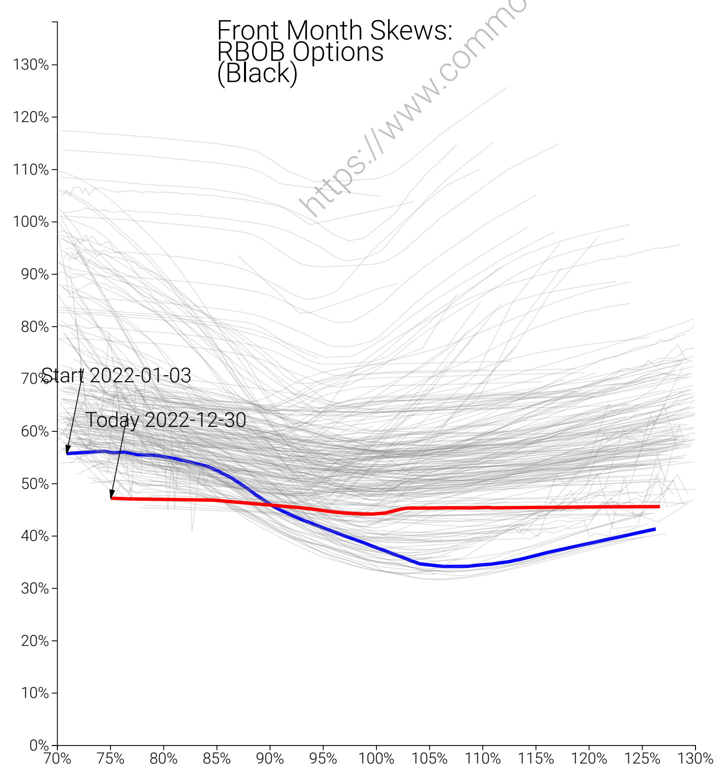


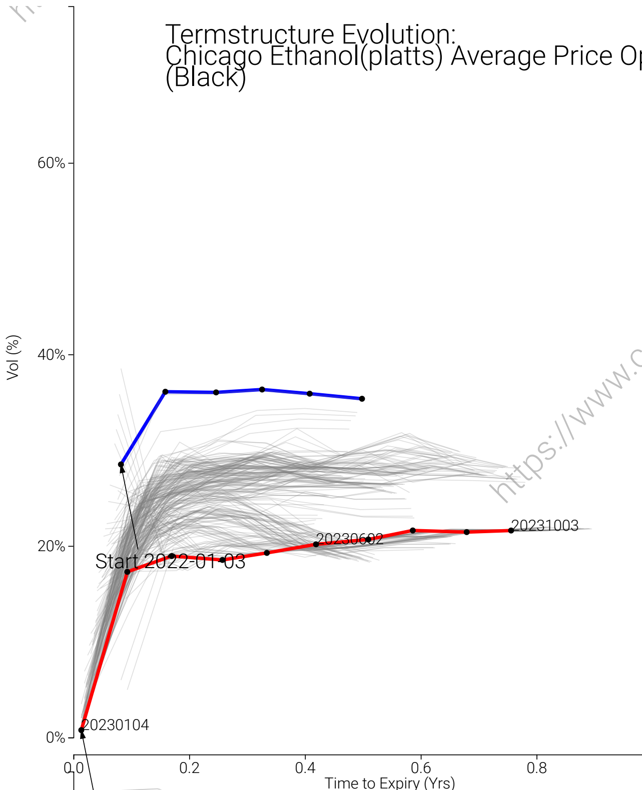
Front Month Skews:
NY Harbor ULSD Options
(Black)
140%
120%
100%
80%
60%
40%
20%
0%
Start 2022-01-03
Today 2022-12-30
70%
75%
80%
85%
90%
95%
100%
105%
110%
115%
120%
125%
130%
https://www.commodityvol.com

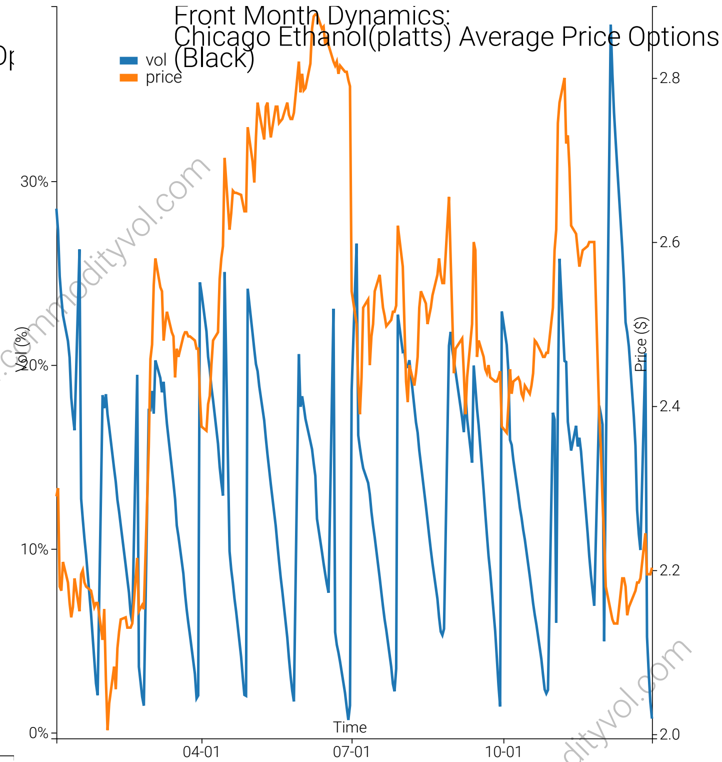

Termstructure Evolution:
RBOB Options
(Black)
Vol (%)
Today 2022-12-30
Start 2022-01-03
20230126
20230627
20231127
Time to Expiry (Yrs)

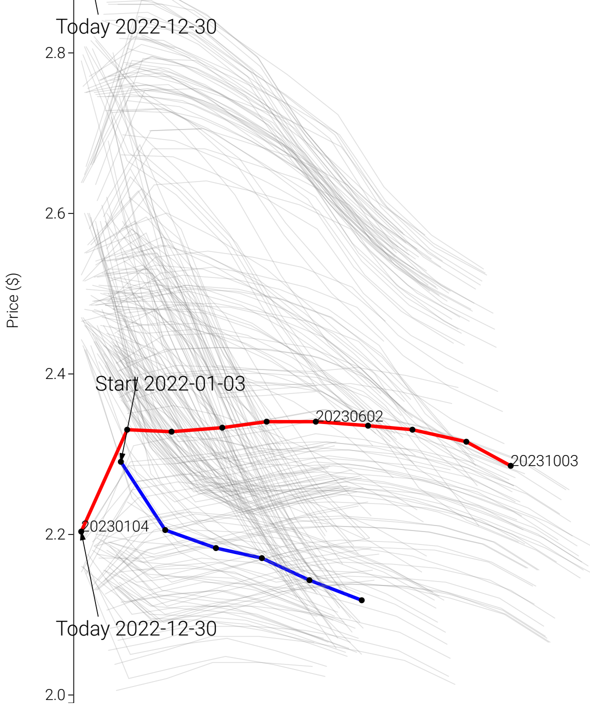

Front Month Dynamics:
RBOB Options
(Black)
vol
price
Vol (%)
Price ($)
Time
04-01
07-01
10-01

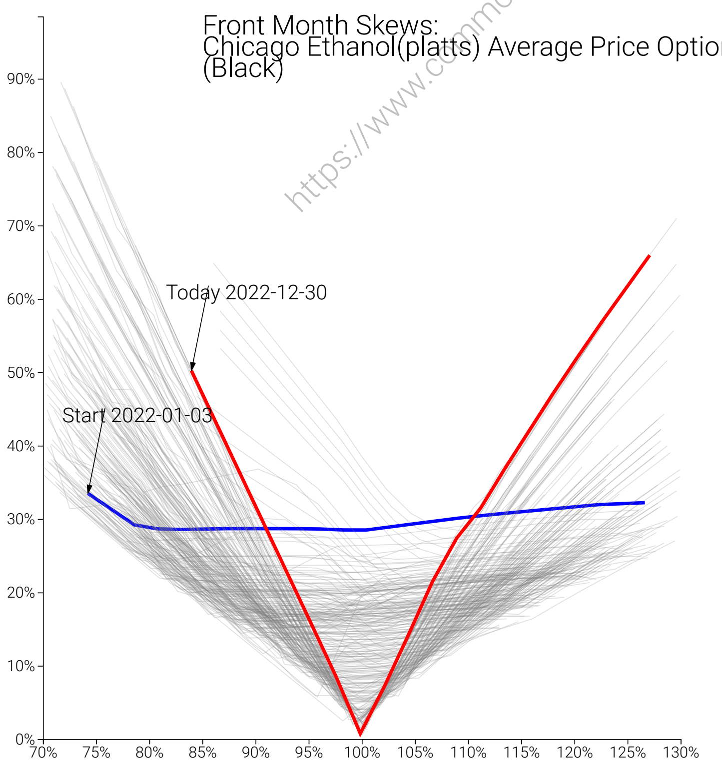

Price ($)
Today 2022-12-30
20230126
20230627
20231127


Front Month Skews:
RBOB Options
(Black)
Start 2022-01-03
Today 2022-12-30

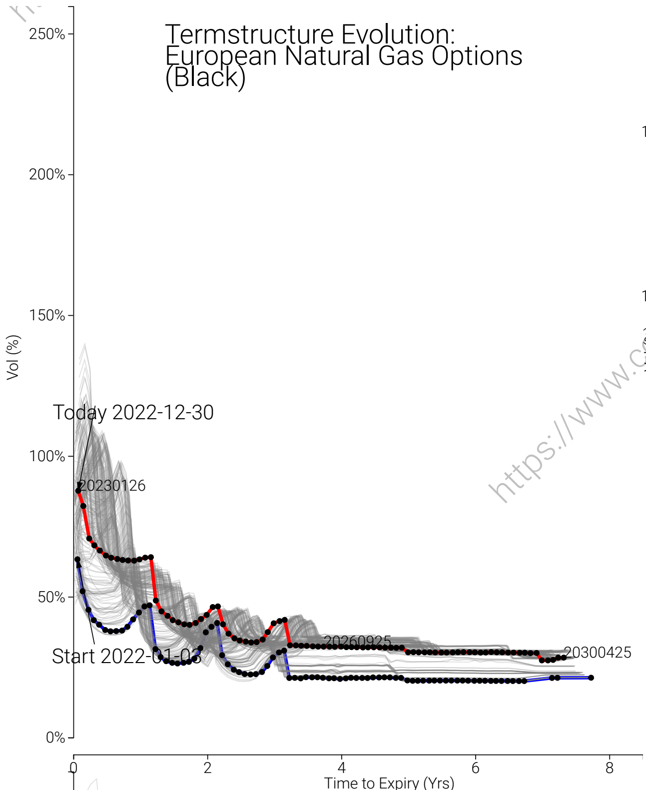

Termstructure Evolution:
Chicago Ethanol(platts) Average Price Op
(Black)
Vol (%)
60%
40%
20%
0%
Start 2022-01-03
20230602
20231003
20230104
0.0
0.2
0.4
0.6
0.8
Time to Expiry (Yrs)
Today 2022-12-30

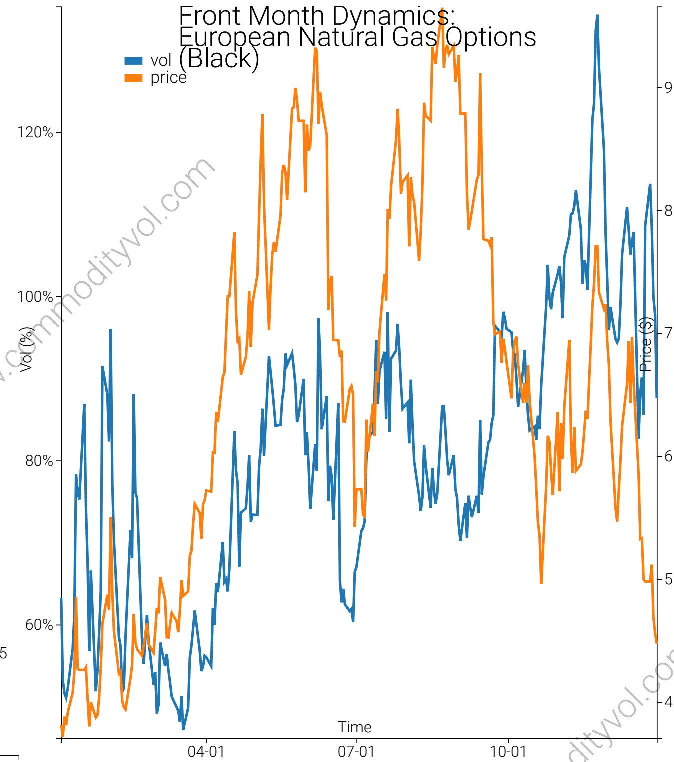

Front Month Dynamics:
Chicago Ethanol(platts) Average Price Options
(Black)
vol
price
Vol (%)
30%
20%
10%
0%
Price ($)
2.8
2.6
2.4
2.2
2.0
04-01
07-01
10-01
Time

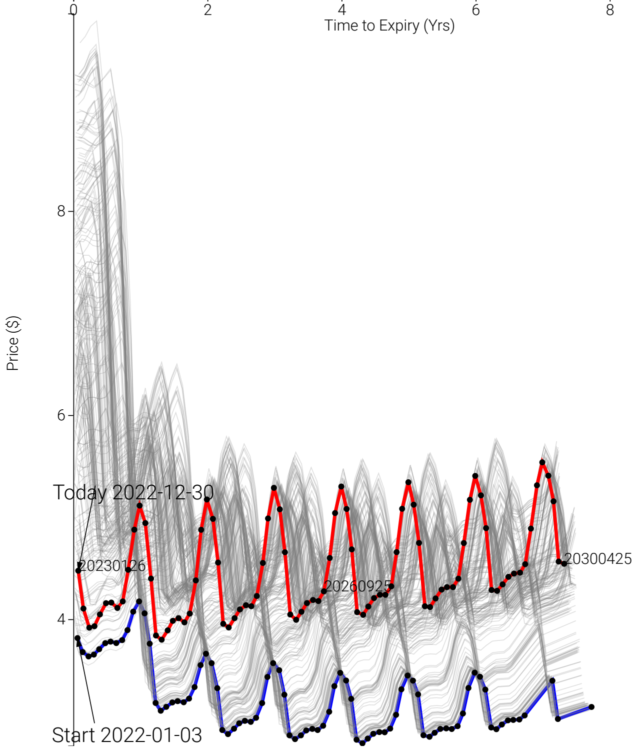

Price ($)
2.8
2.6
2.4
2.2
2.0
Start 2022-01-03
20230602
20231003
20230104
Today 2022-12-30

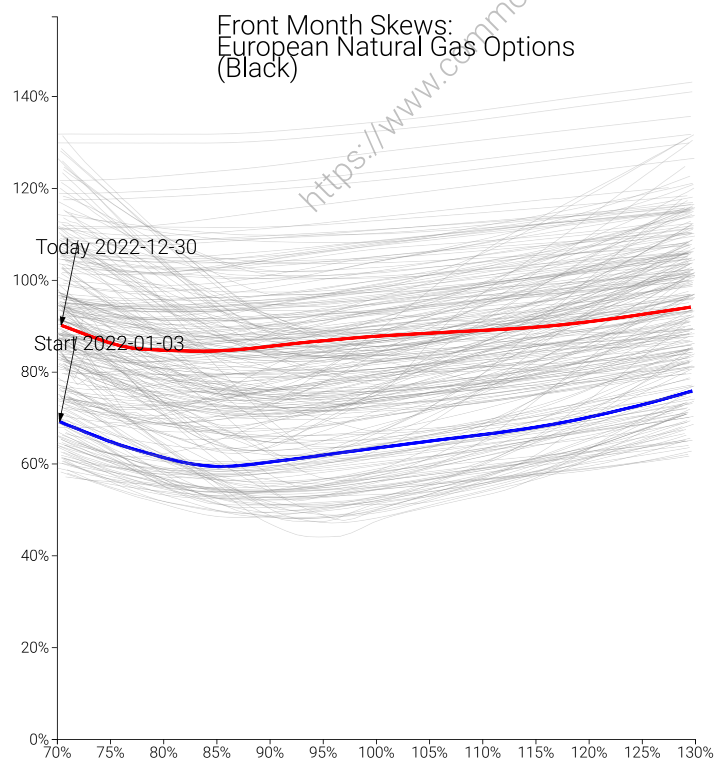

Front Month Skews:
Chicago Ethanol(platts) Average Price Optio
(Black)
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
Today 2022-12-30
Start 2022-01-03
70%
75%
80%
85%
90%
95%
100%
105%
110%
115%
120%
125%
130%

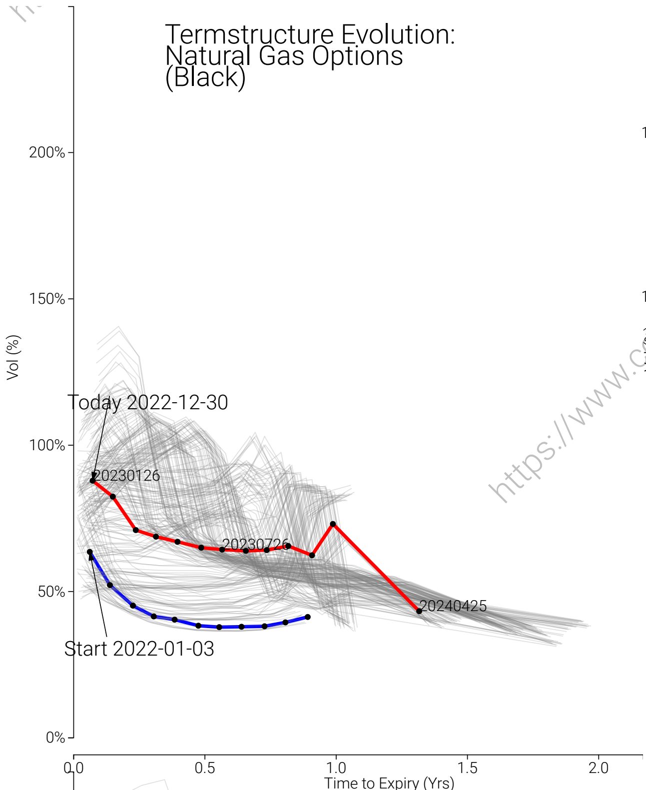
Energy: Natural Gas

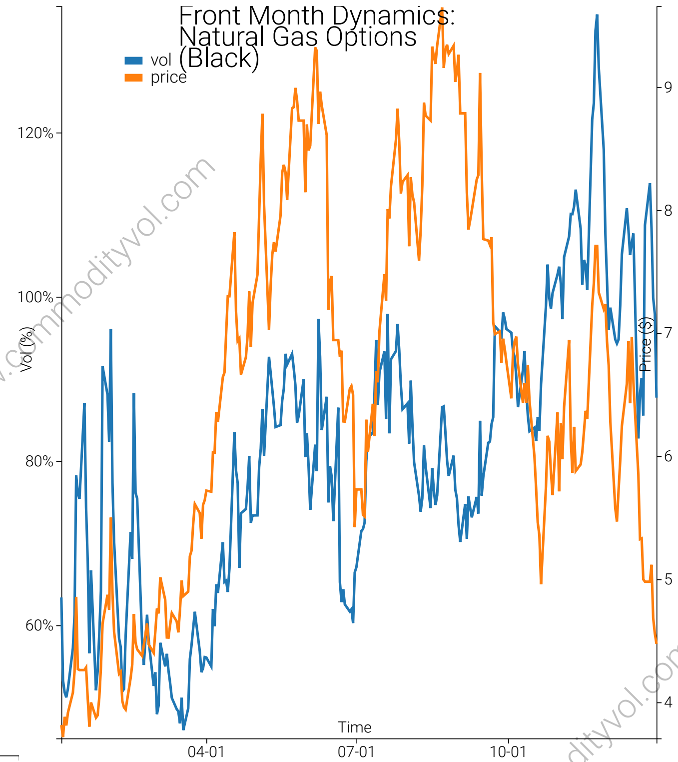

Termstructure Evolution:
European Natural Gas Options
(Black)
Vol (%)
Today 2022-12-30
20230126
Start 2022-01-03
20260925
20300425
Time to Expiry (Yrs)

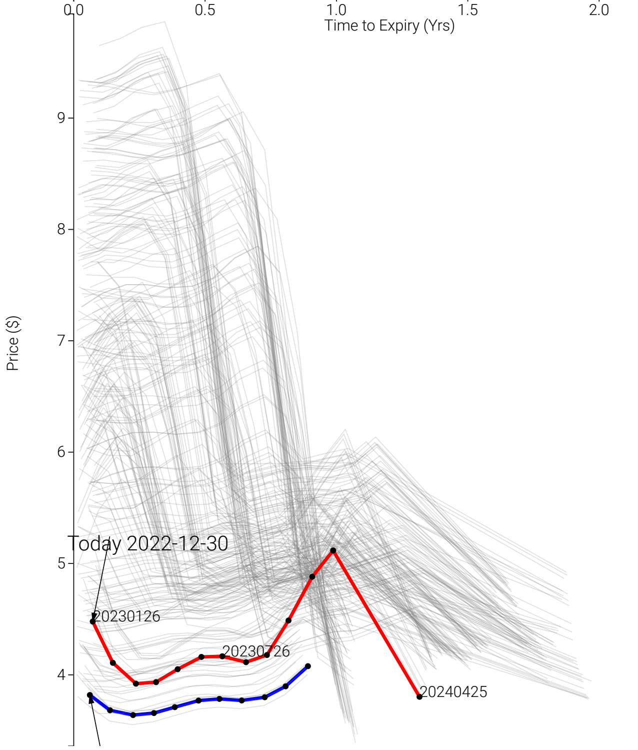

Front Month Dynamics:
European Natural Gas Options
(Black)
vol
price
Vol (%)
Price ($)
Time
04-01
07-01
10-01

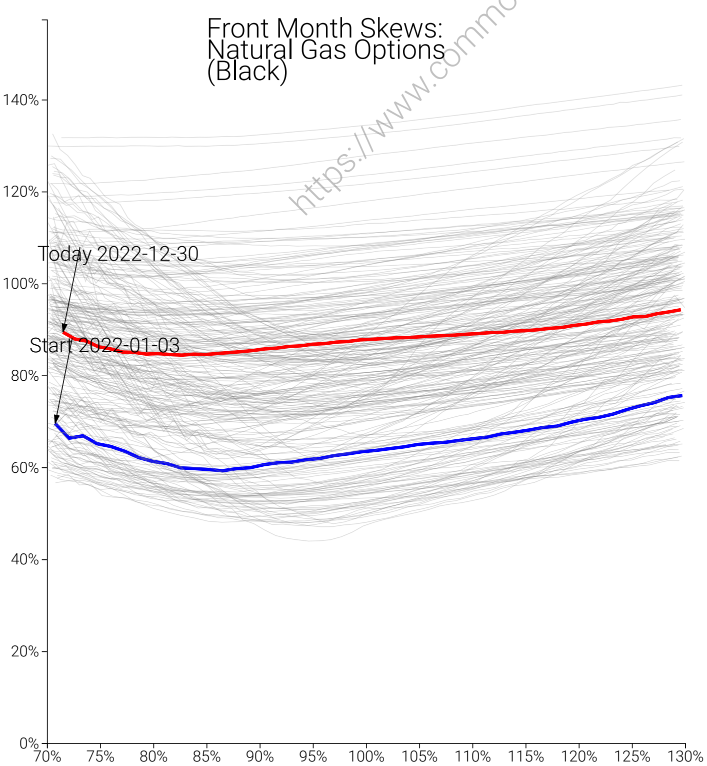

Price ($)
Today 2022-12-30
20230126
20260925
20300425
Start 2022-01-03

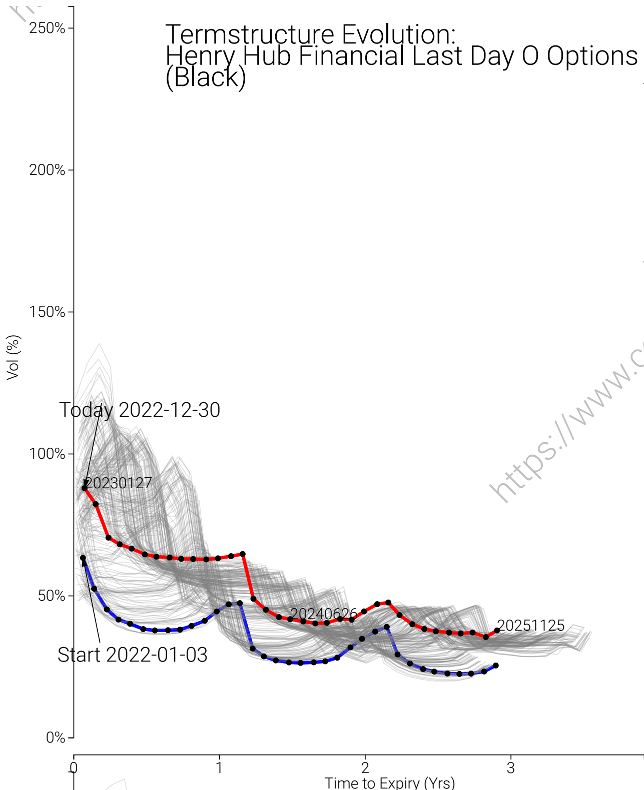

Front Month Skews:
European Natural Gas Options
(Black)
Today 2022-12-30
Start 2022-01-03

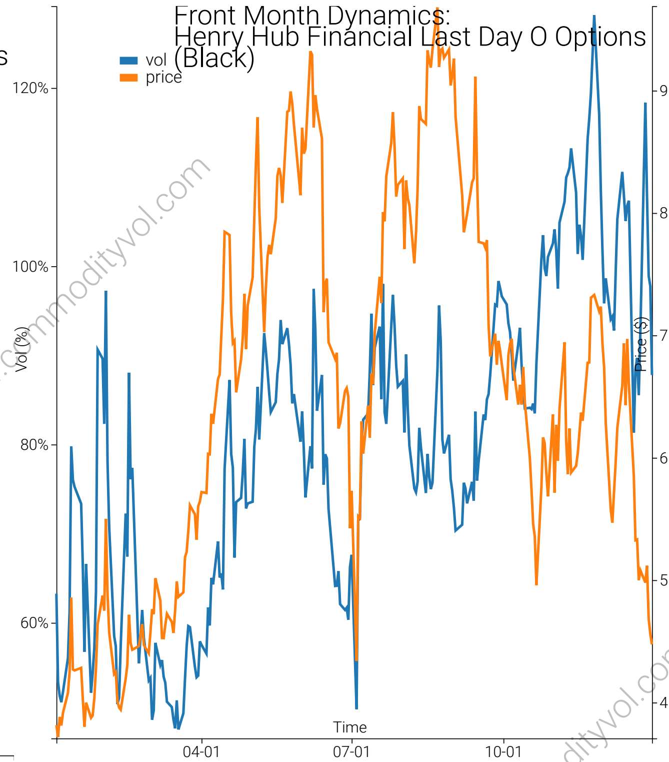

Termstructure Evolution:
Natural Gas Options
(Black)
Vol (%)
200%
150%
100%
50%
0%
Today 2022-12-30
20230126
20230726
20240425
Start 2022-01-03
0.0
0.5
1.0
1.5
2.0
Time to Expiry (Yrs)
https://www.commodityvol.com

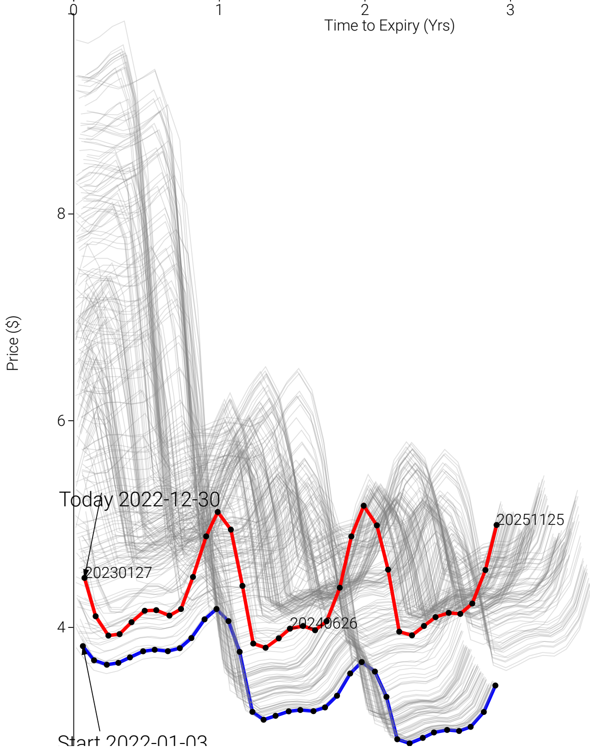

Front Month Dynamics:
Natural Gas Options
(Black)
vol
price
Vol (%)
120%
100%
80%
60%
Price ($)
9
8
7
6
5
4
Time
04-01
07-01
10-01
https://www.commodityvol.com

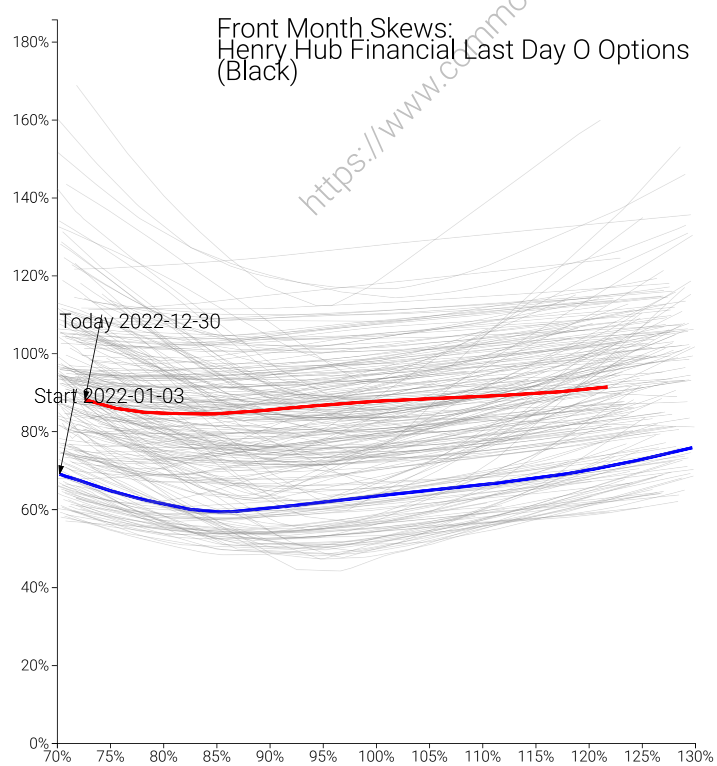

Price ($)
9
8
7
6
5
4
Today 2022-12-30
20230126
20230726
20240425

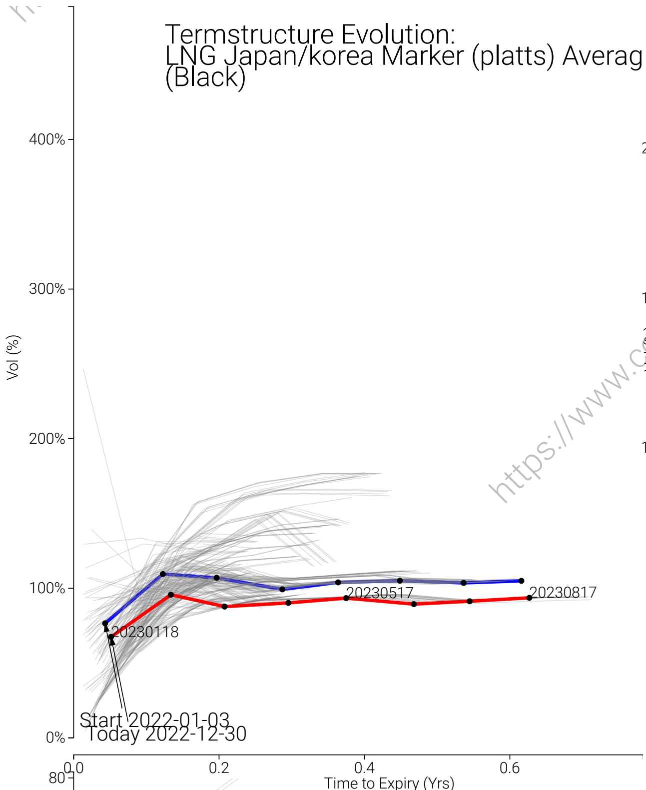

Front Month Skews:
Natural Gas Options
(Black)
140%
120%
100%
80%
60%
40%
20%
0%
Today 2022-12-30
Start 2022-01-03
70%
75%
80%
85%
90%
95%
100%
105%
110%
115%
120%
125%
130%
https://www.commodityvol.com

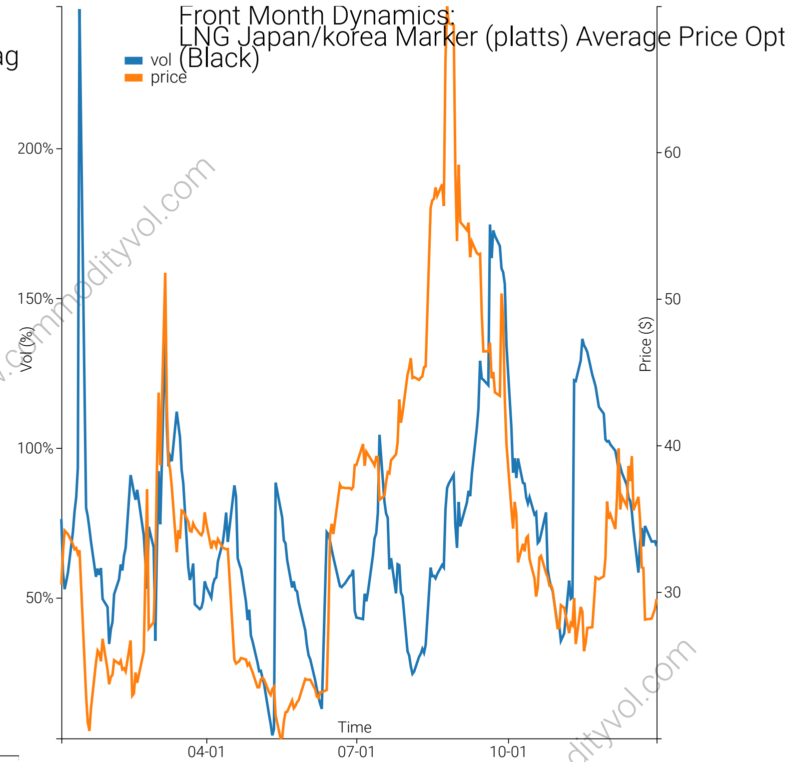

Termstructure Evolution:
Henry Hub Financial Last Day O Options
(Black)
Vol (%)
250%
200%
150%
100%
50%
0%
Today 2022-12-30
20230127
20240626
20251125
Start 2022-01-03
0
1
2
3
Time to Expiry (Yrs)
https://www.commodityvol.com

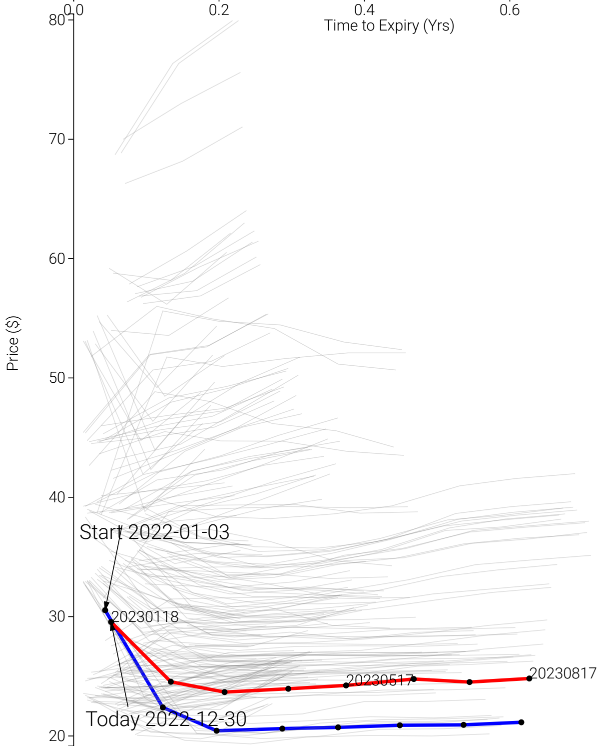

Front Month Dynamics:
Henry Hub Financial Last Day O Options
(Black)
vol
price
Vol (%)
120%
100%
80%
60%
Price ($)
9
8
7
6
5
4
Time
04-01
07-01
10-01
https://www.commodityvol.com

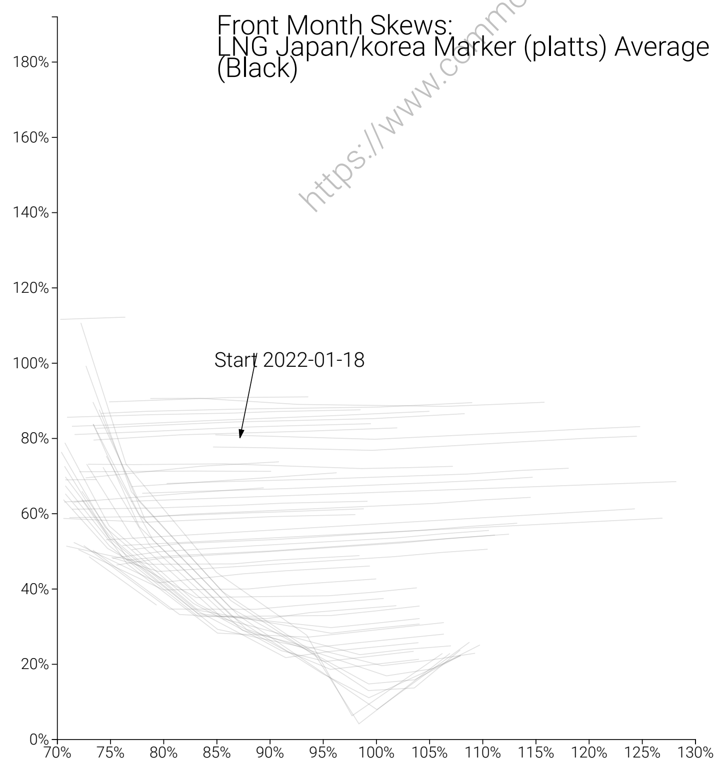

Price ($)
8
6
4
Today 2022-12-30
20230127
20240626
20251125
Start 2022-01-03

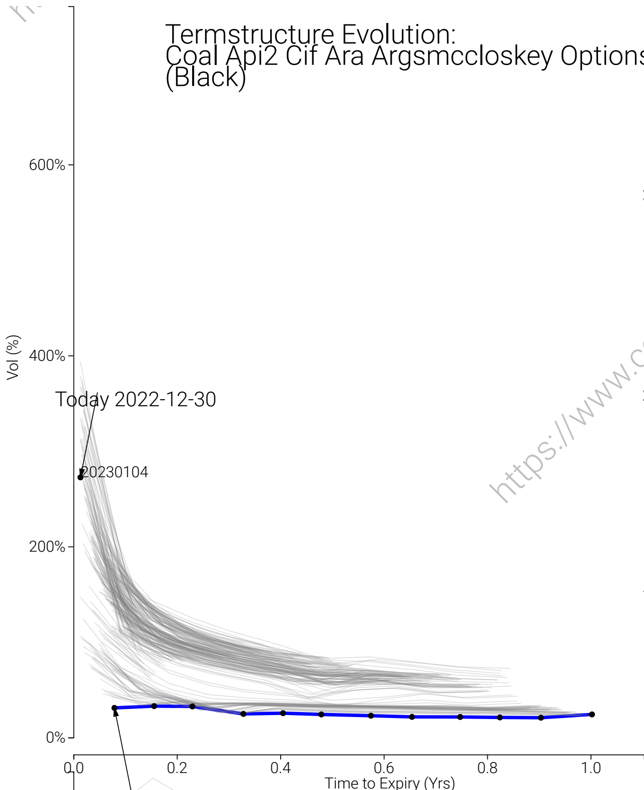

Front Month Skews:
Henry Hub Financial Last Day O Options
(Black)
180%
160%
140%
120%
100%
80%
60%
40%
20%
0%
Today 2022-12-30
Start 2022-01-03
70%
75%
80%
85%
90%
95%
100%
105%
110%
115%
120%
125%
130%
https://www.commodityvol.com

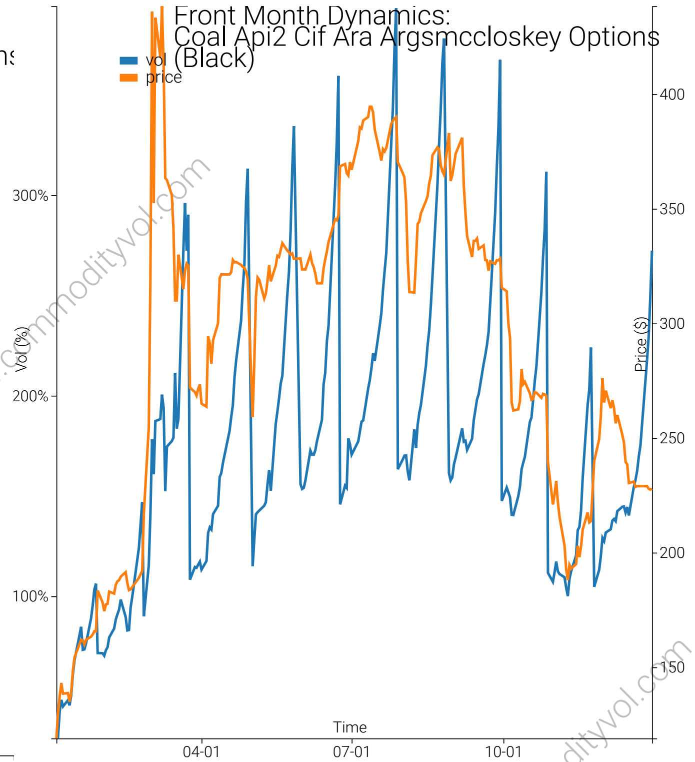

Termstructure Evolution:
LNG Japan/korea Marker (platts) Averag
(Black)
Vol (%)
400%
300%
200%
100%
0%
20230118
20230517
20230817
Start 2022-01-03
Today 2022-12-30
0.0
0.2
0.4
0.6
Time to Expiry (Yrs)

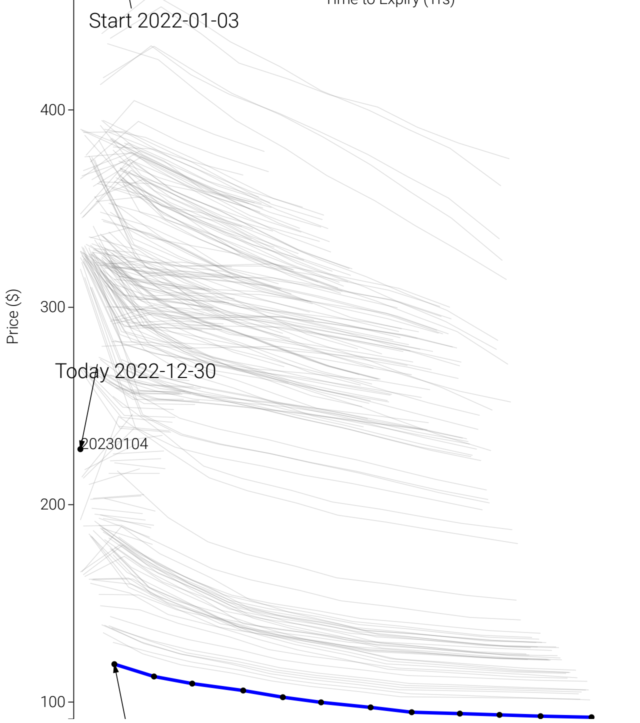

Front Month Dynamics:
LNG Japan/korea Marker (platts) Average Price Opt
(Black)
vol
price
Vol (%)
Price ($)
200%
150%
100%
50%
60
50
40
30
Time
04-01
07-01
10-01

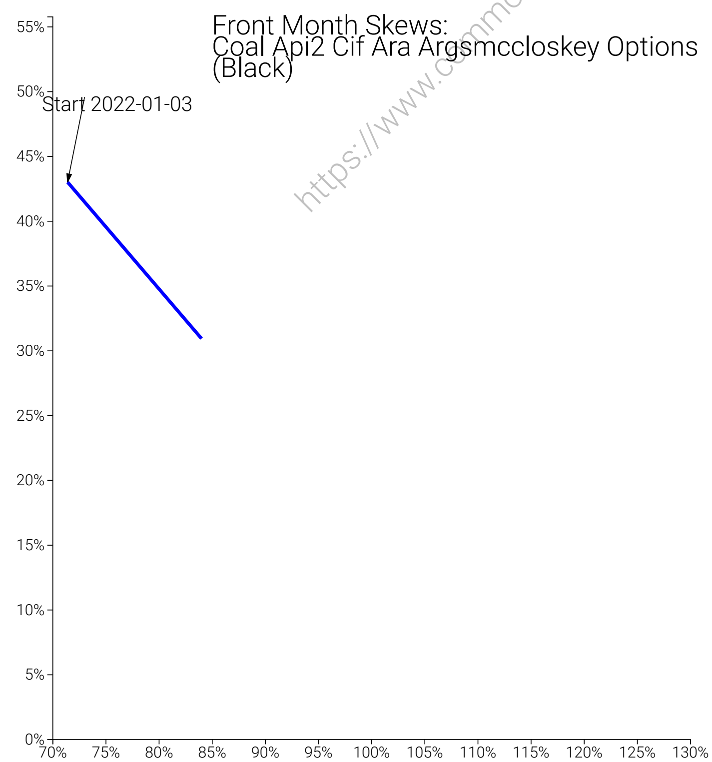

Price ($)
80
70
60
50
40
30
20
Start 2022-01-03
20230118
20230517
20230817
Today 2022-12-30


Front Month Skews:
LNG Japan/korea Marker (platts) Average Pr
(Black)
180%
160%
140%
120%
100%
80%
60%
40%
20%
0%
Start 2022-01-18
70%
75%
80%
85%
90%
95%
100%
105%
110%
115%
120%
125%
130%

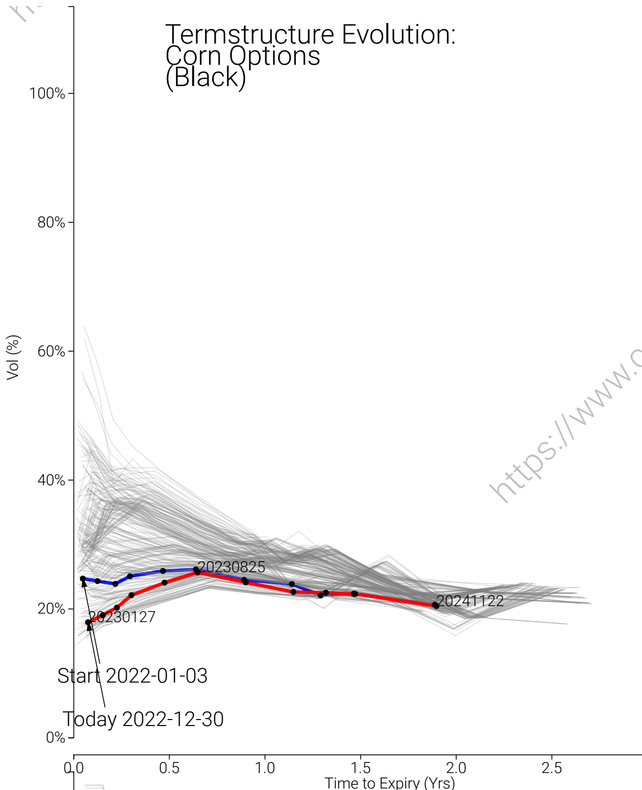

Termstructure Evolution:
Coal Api2 Cif Ara Argsmccloskey Options
(Black)
Vol (%)
600%
400%
200%
0%
Today 2022-12-30
20230104
Start 2022-01-03
0.0
0.2
0.4
0.6
0.8
1.0
Time to Expiry (Yrs)

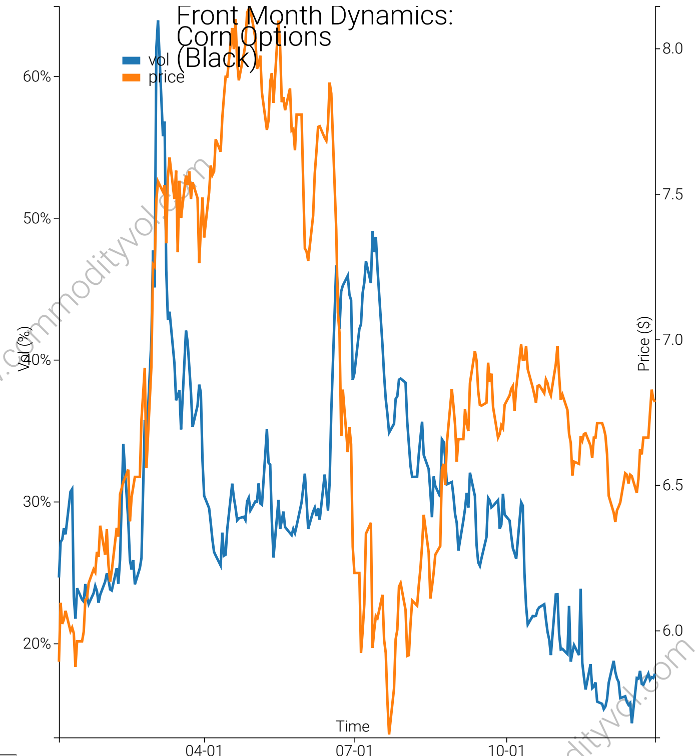

Front Month Dynamics:
Coal Api2 Cif Ara Argsmccloskey Options
(Black)
vol
price
Vol (%)
300%
200%
100%
Price ($)
400
350
300
250
200
150
04-01
07-01
10-01
Time

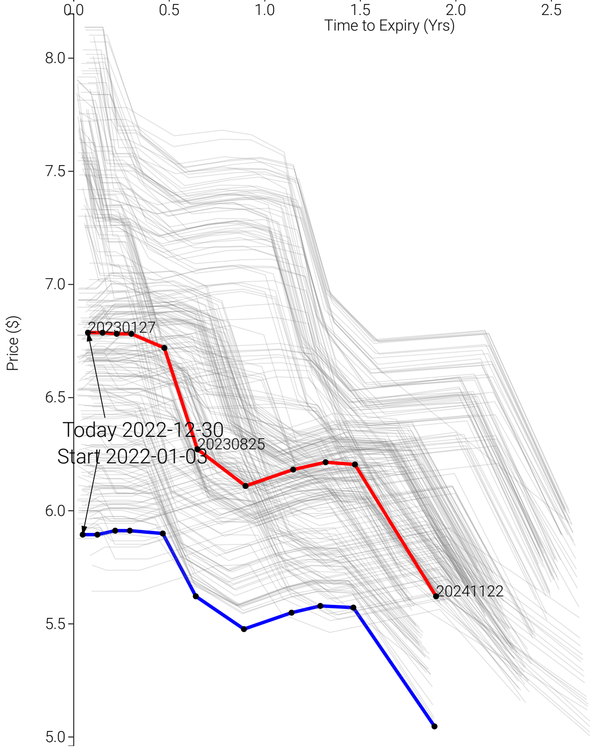

Price ($)
400
300
200
100
Today 2022-12-30
20230104

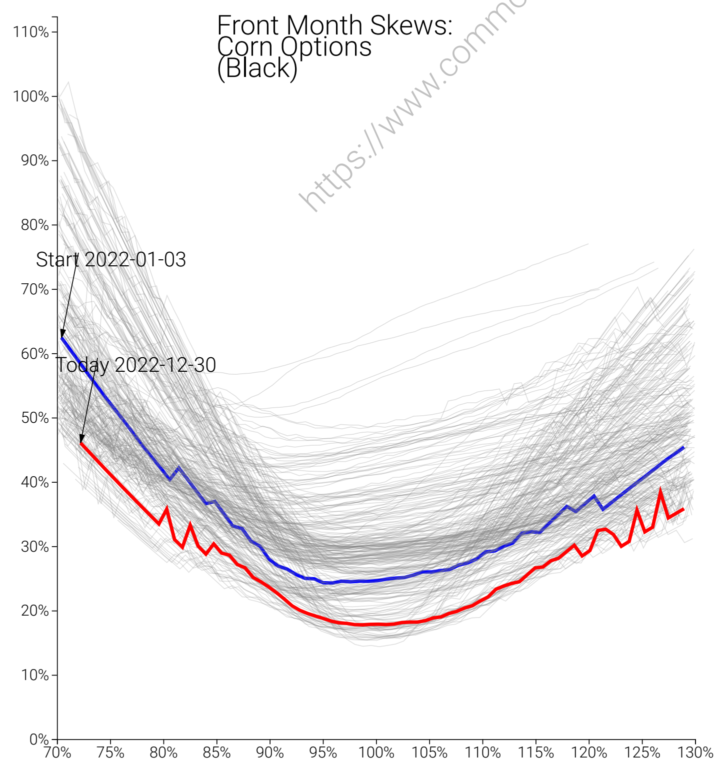

Front Month Skews:
Coal Api2 Cif Ara Argsmccloskey Options
(Black)
Start 2022-01-03
55%
50%
45%
40%
35%
30%
25%
20%
15%
10%
5%
0%
70%
75%
80%
85%
90%
95%
100%
105%
110%
115%
120%
125%
130%

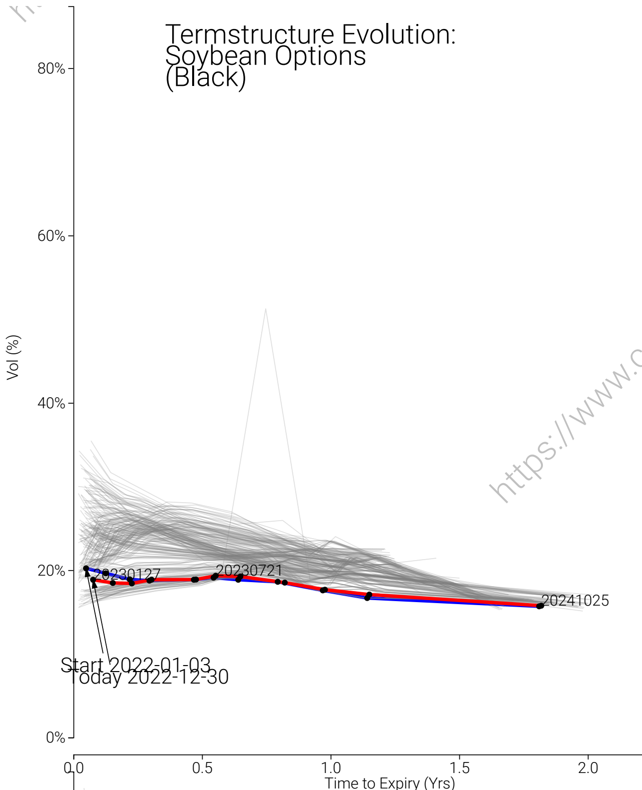
Ags: Grains, Oilseeds, and so forth

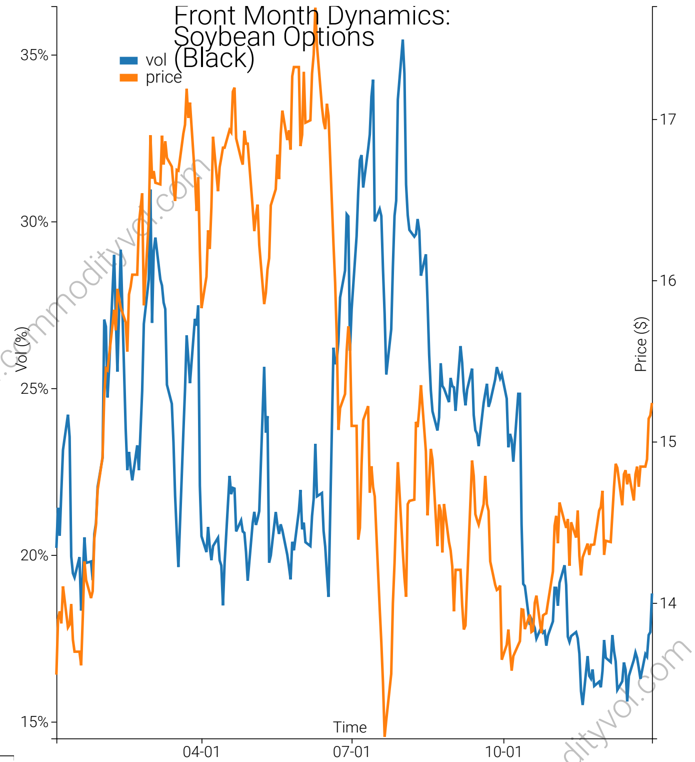

Termstructure Evolution:
Corn Options
(Black)
Vol (%)
100%
80%
60%
40%
20%
0%
20230825
20230127
20241122
Start 2022-01-03
Today 2022-12-30
0.0
0.5
1.0
1.5
2.0
2.5
Time to Expiry (Yrs)

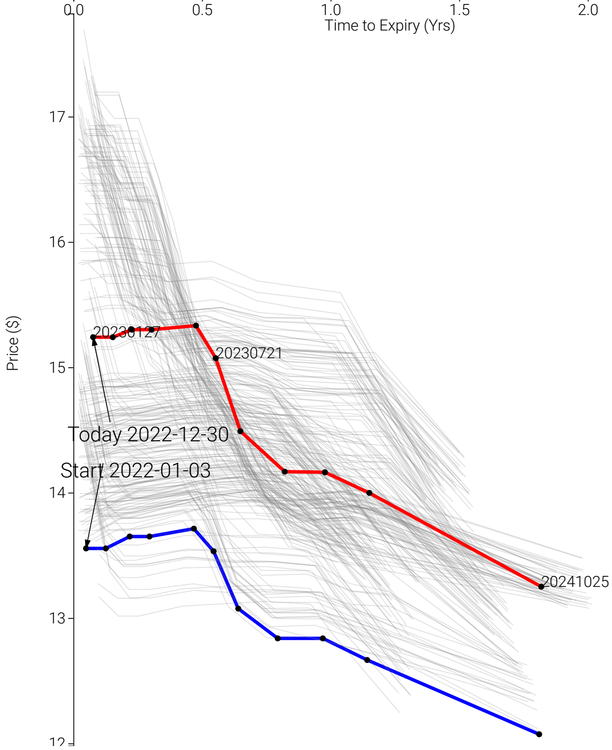

Front Month Dynamics:
Corn Options
(Black)
vol
price
Vol (%)
60%
50%
40%
30%
20%
Price ($)
8.0
7.5
7.0
6.5
6.0
Time
04-01
07-01
10-01

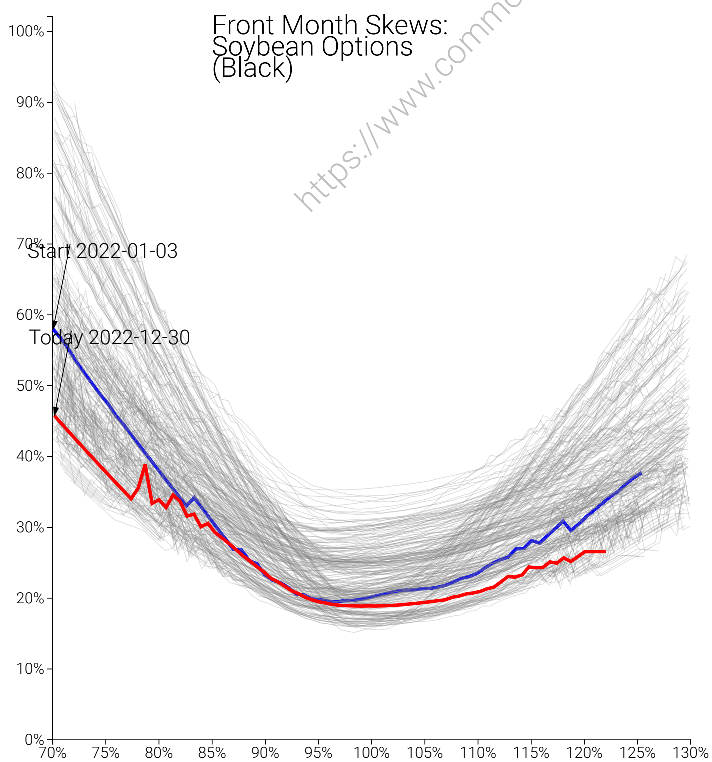

Price ($)
8.0
7.5
7.0
6.5
6.0
5.5
5.0
20230127
Today 2022-12-30
20230825
Start 2022-01-03
20241122

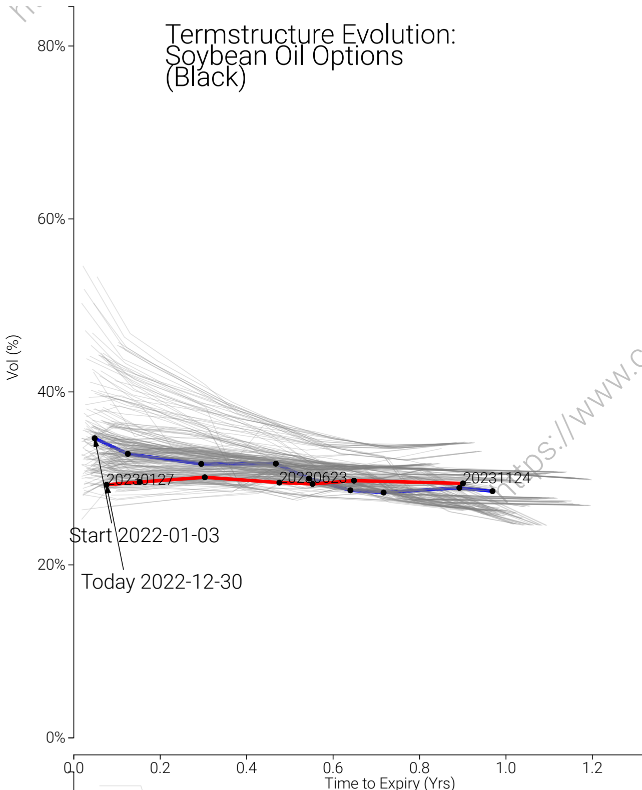

Front Month Skews:
Corn Options
(Black)
110%
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
Start 2022-01-03
Today 2022-12-30
70%
75%
80%
85%
90%
95%
100%
105%
110%
115%
120%
125%
130%

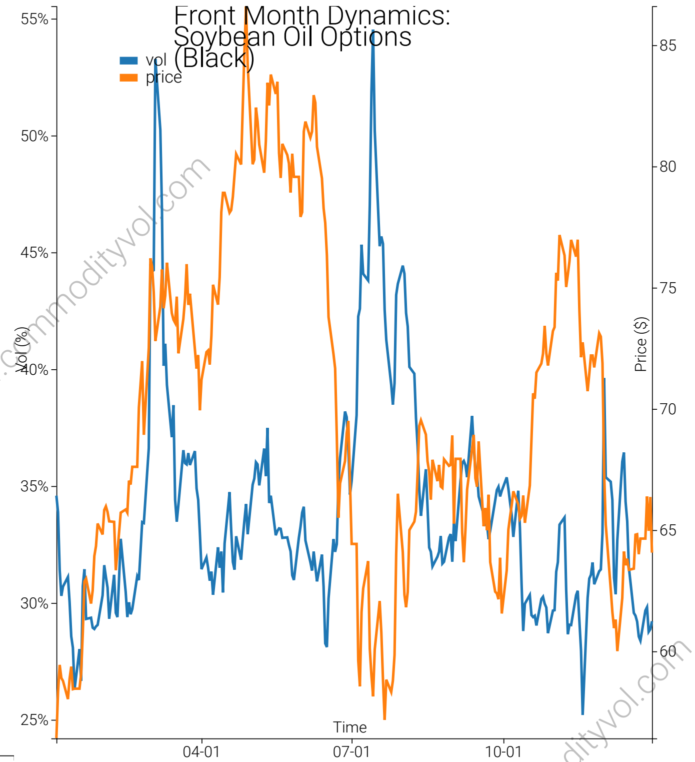

Termstructure Evolution:
Soybean Options
(Black)
Vol (%)
80%
60%
40%
20%
0%
20230127
20230721
20241025
Start 2022-01-03
Today 2022-12-30
0.0
0.5
1.0
1.5
2.0
Time to Expiry (Yrs)

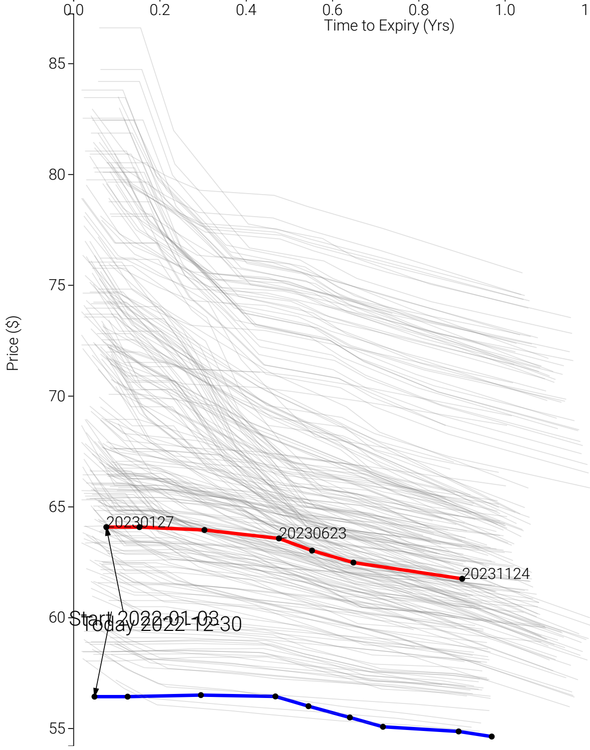

Front Month Dynamics:
Soybean Options
(Black)
vol
price
Vol (%)
35%
30%
25%
20%
15%
Price ($)
17
16
15
14
Time
04-01
07-01
10-01

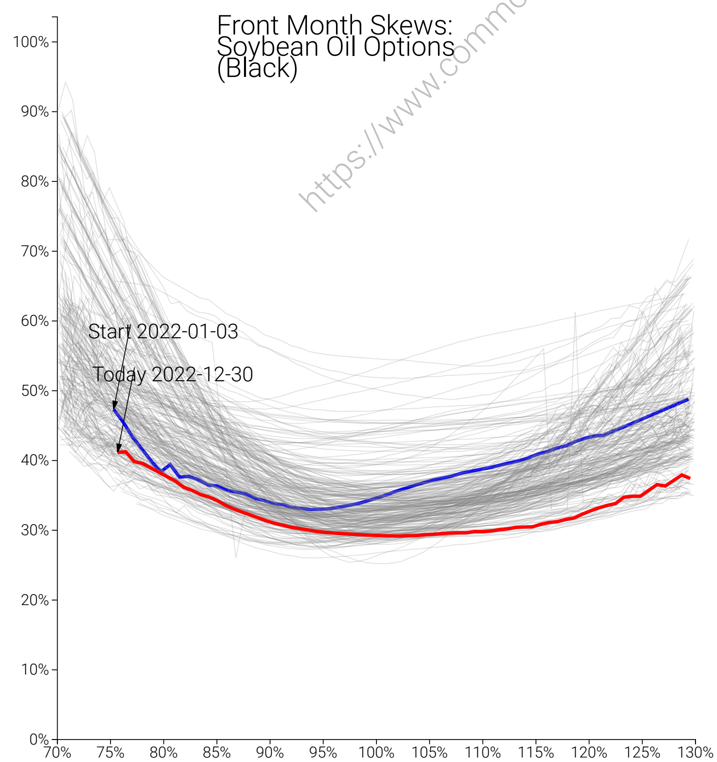

Price ($)
17
16
15
14
13
12
20230127
20230721
Today 2022-12-30
Start 2022-01-03
20241025

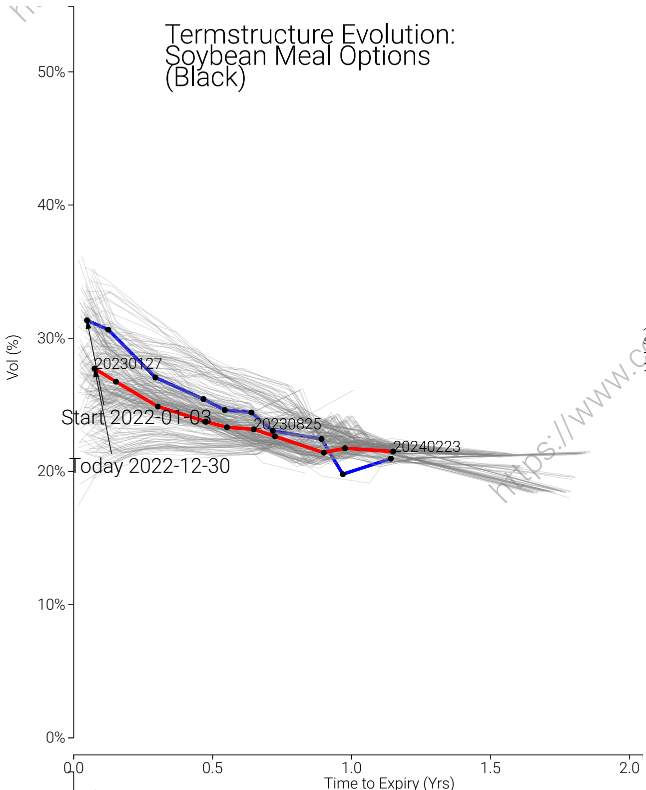

Front Month Skews:
Soybean Options
(Black)
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
Start 2022-01-03
Today 2022-12-30
70%
75%
80%
85%
90%
95%
100%
105%
110%
115%
120%
125%
130%

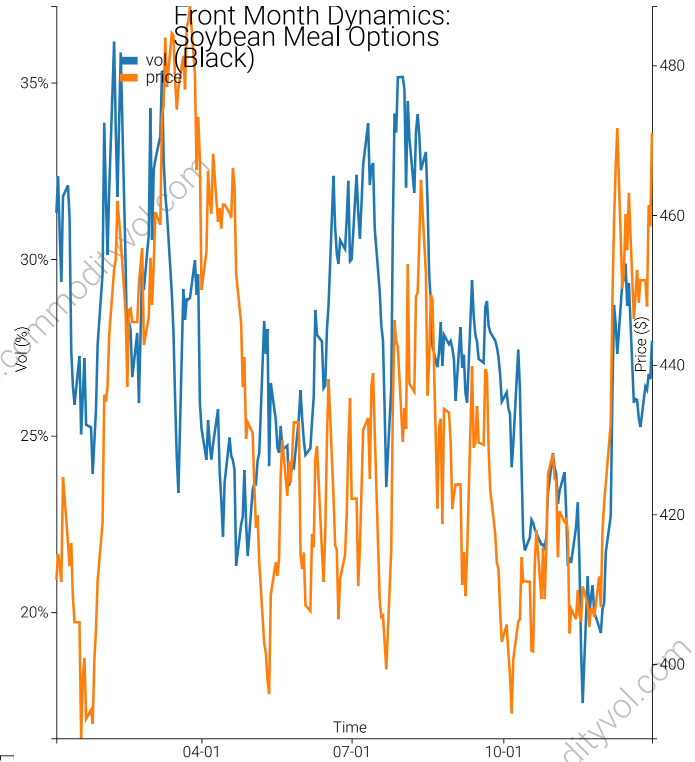

Termstructure Evolution:
Soybean Oil Options
(Black)
80%
60%
40%
20%
0%
Vol (%)
20230127
20230623
20231124
Start 2022-01-03
Today 2022-12-30
0.0
0.2
0.4
0.6
0.8
1.0
1.2
Time to Expiry (Yrs)

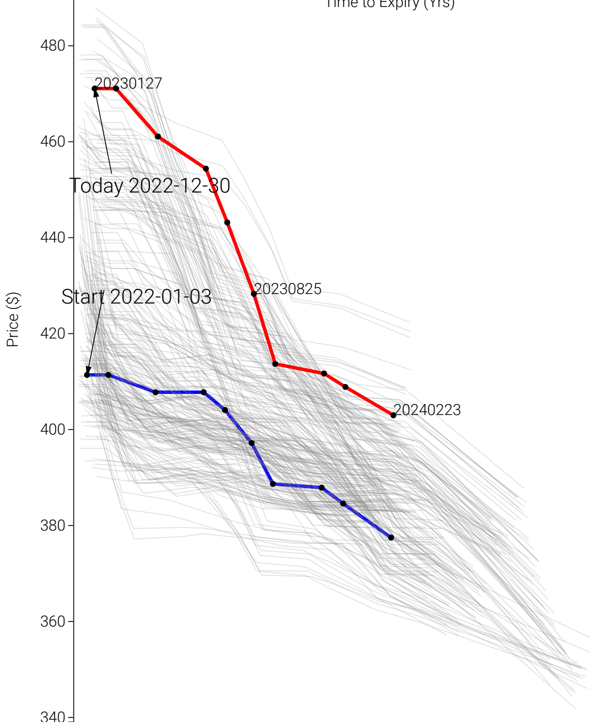

Front Month Dynamics:
Soybean Oil Options
(Black)
vol
price
55%
50%
45%
40%
35%
30%
25%
Vol (%)
85
80
75
70
65
60
Price ($)
Time
04-01
07-01
10-01

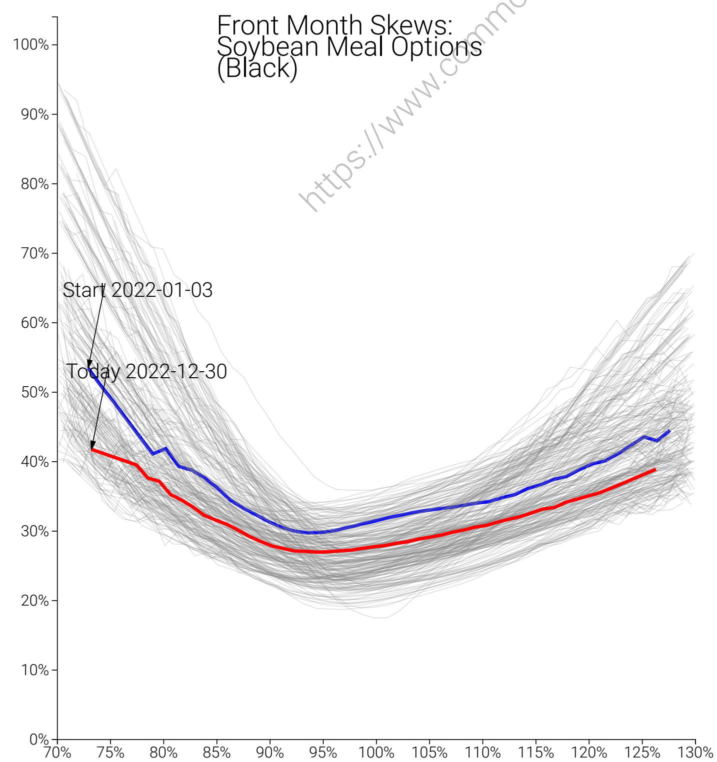

85
80
75
70
65
60
55
Price ($)
20230127
20230623
20231124
Start 2022-01-03
Today 2022-12-30

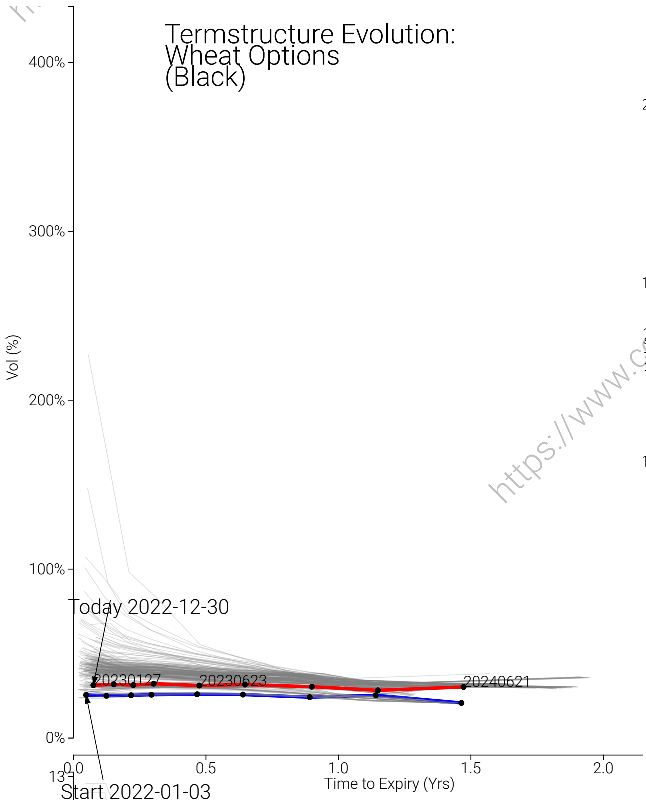

Front Month Skews:
Soybean Oil Options
(Black)
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
Start 2022-01-03
Today 2022-12-30
70%
75%
80%
85%
90%
95%
100%
105%
110%
115%
120%
125%
130%

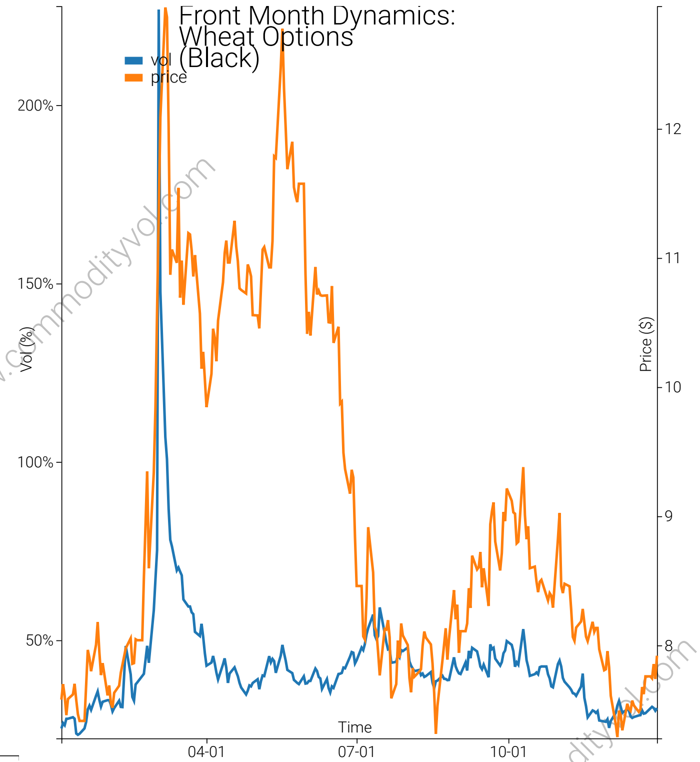

Termstructure Evolution:
Soybean Meal Options
(Black)
Vol (%)
Time to Expiry (Yrs)
20230127
Start 2022-01-03
20230825
20240223
Today 2022-12-30

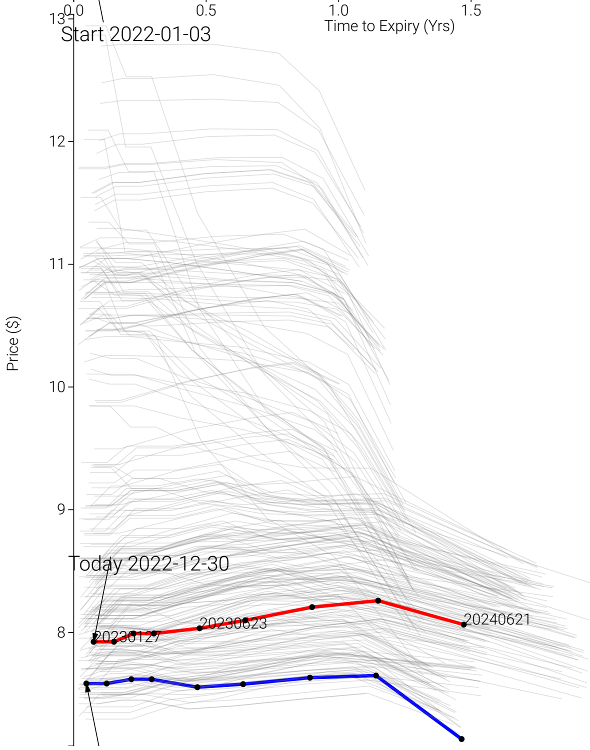

Front Month Dynamics:
Soybean Meal Options
(Black)
vol
price
Vol (%)
Price ($)
Time
04-01
07-01
10-01

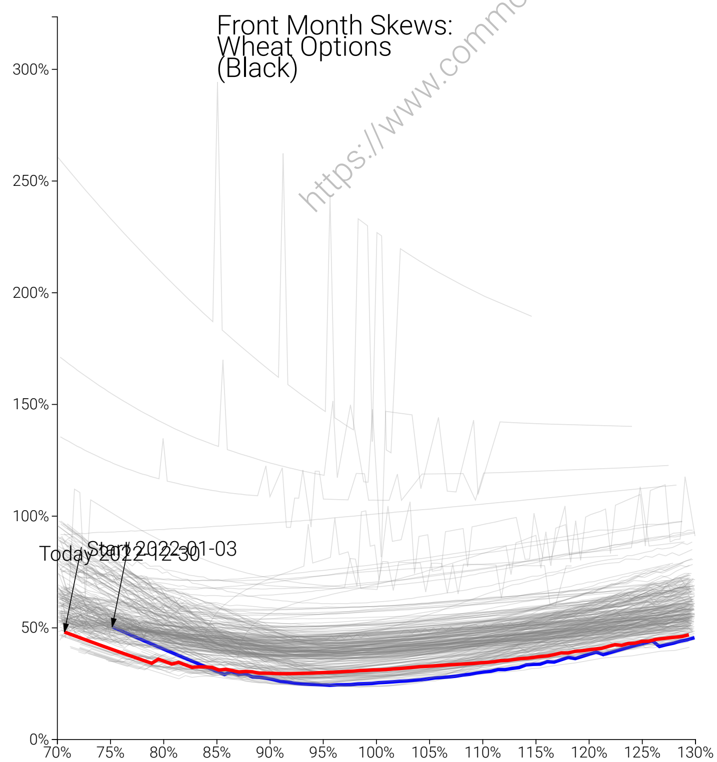

Price ($)
20230127
Today 2022-12-30
Start 2022-01-03
20230825
20240223

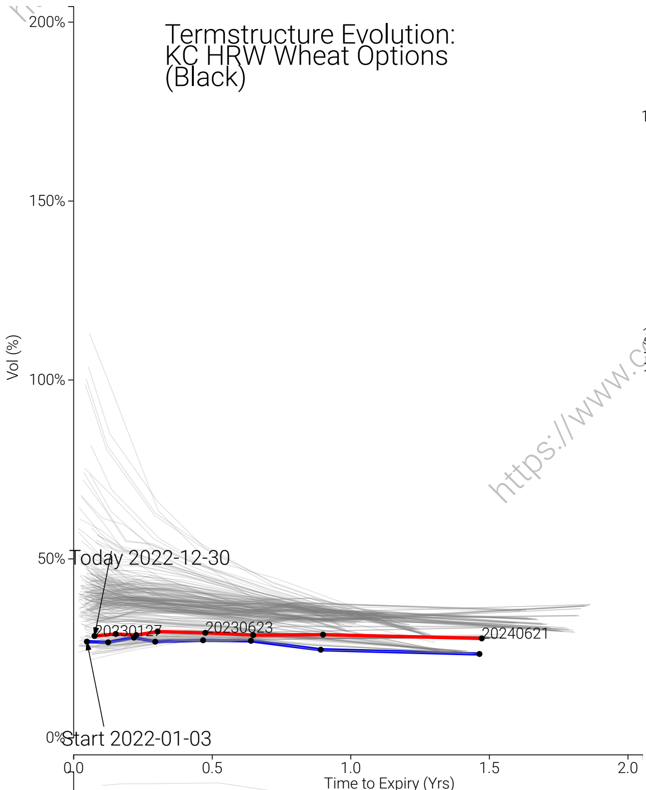

Front Month Skews:
Soybean Meal Options
(Black)
Start 2022-01-03
Today 2022-12-30

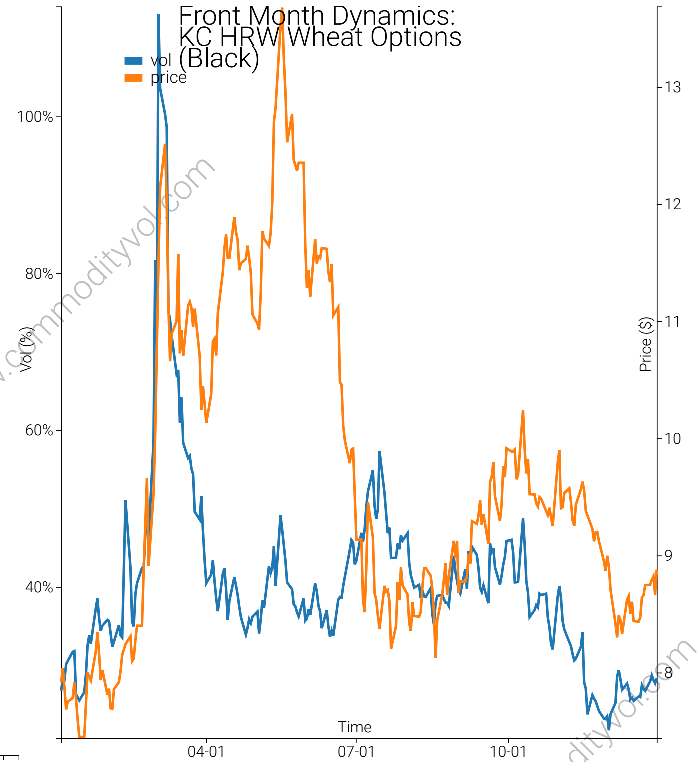

Termstructure Evolution:
Wheat Options
(Black)
Vol (%)
400%
300%
200%
100%
0%
Today 2022-12-30
20230127
20230623
20240621
Start 2022-01-03
0.0
0.5
1.0
1.5
2.0
Time to Expiry (Yrs)

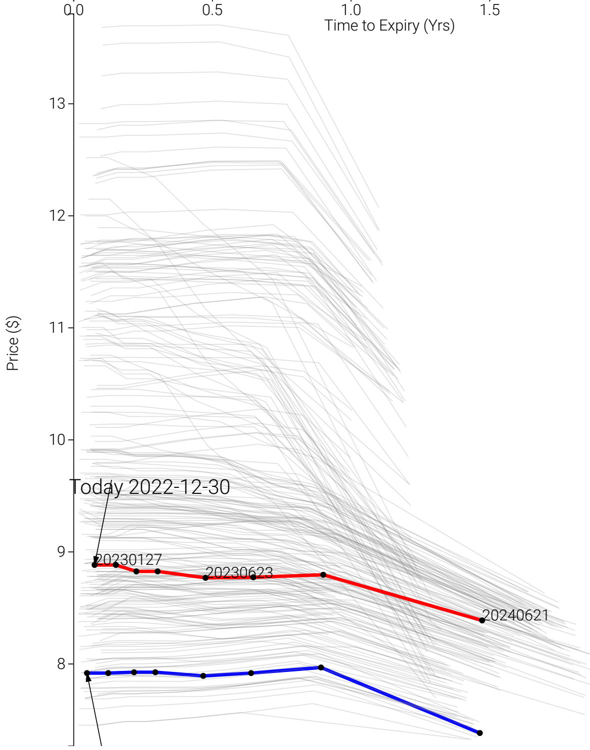

Front Month Dynamics:
Wheat Options
(Black)
vol
price
Vol (%)
Price ($)
200%
150%
100%
50%
12
11
10
9
8
Time
04-01
07-01
10-01

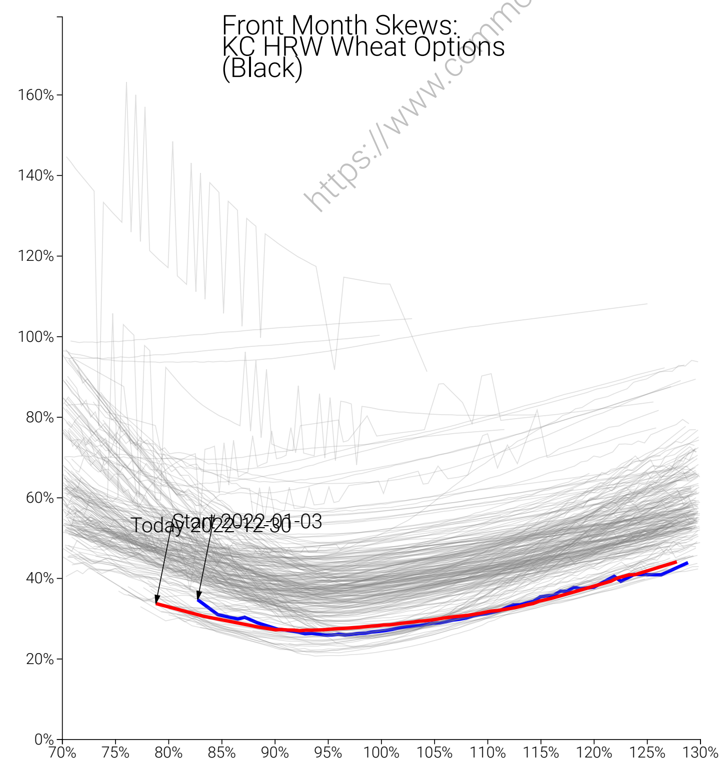

Price ($)
13
12
11
10
9
8
Today 2022-12-30
20230127
20230623
20240621

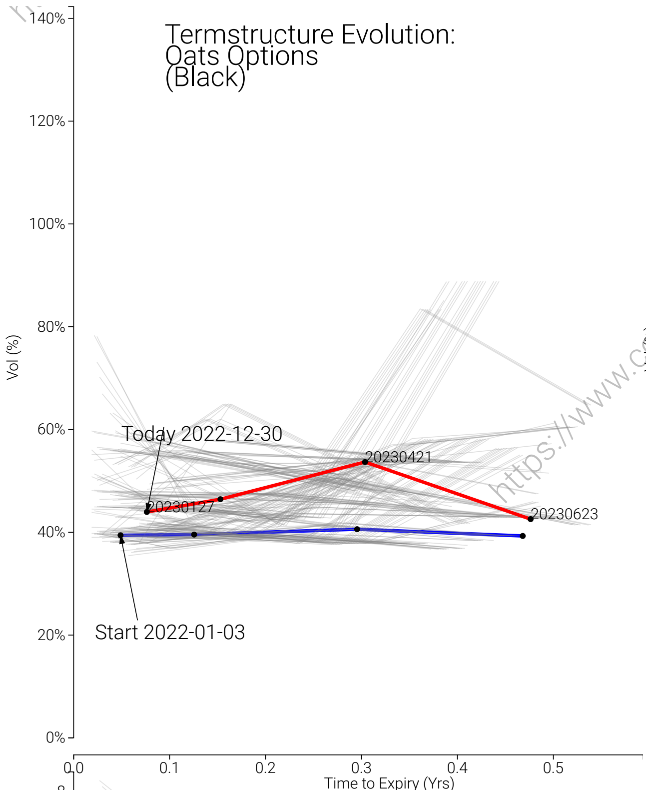

Front Month Skews:
Wheat Options
(Black)
300%
250%
200%
150%
100%
50%
0%
Today 2022-12-30
Start 2022-01-03
70%
75%
80%
85%
90%
95%
100%
105%
110%
115%
120%
125%
130%

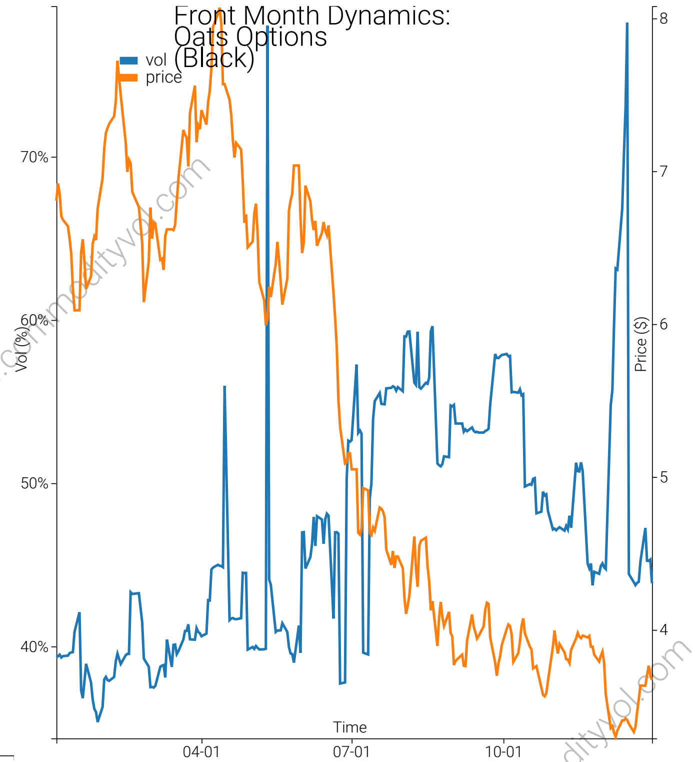

Termstructure Evolution:
KC HRW Wheat Options
(Black)
Vol (%)
200%
150%
100%
50%
0%
Today 2022-12-30
Start 2022-01-03
20230127
20230623
20240621
0.0
0.5
1.0
1.5
2.0
Time to Expiry (Yrs)

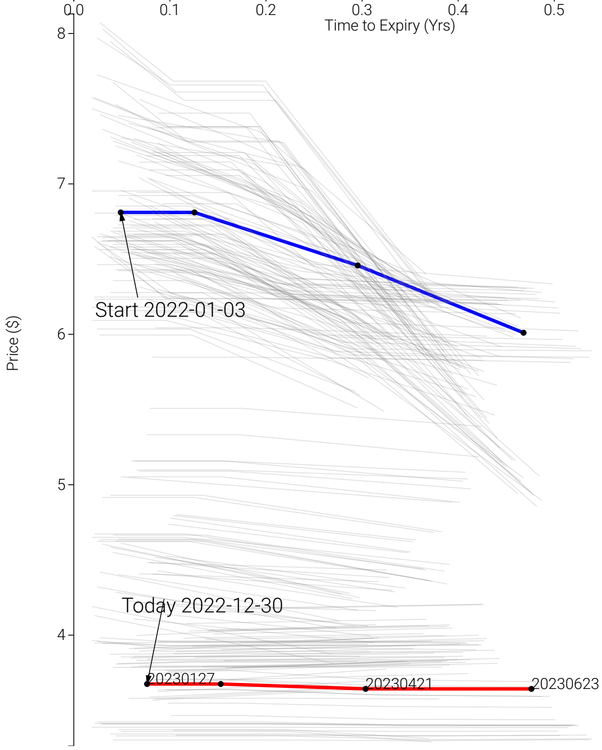

Front Month Dynamics:
KC HRW Wheat Options
(Black)
vol
price
Vol (%)
Price ($)
Time
04-01
07-01
10-01

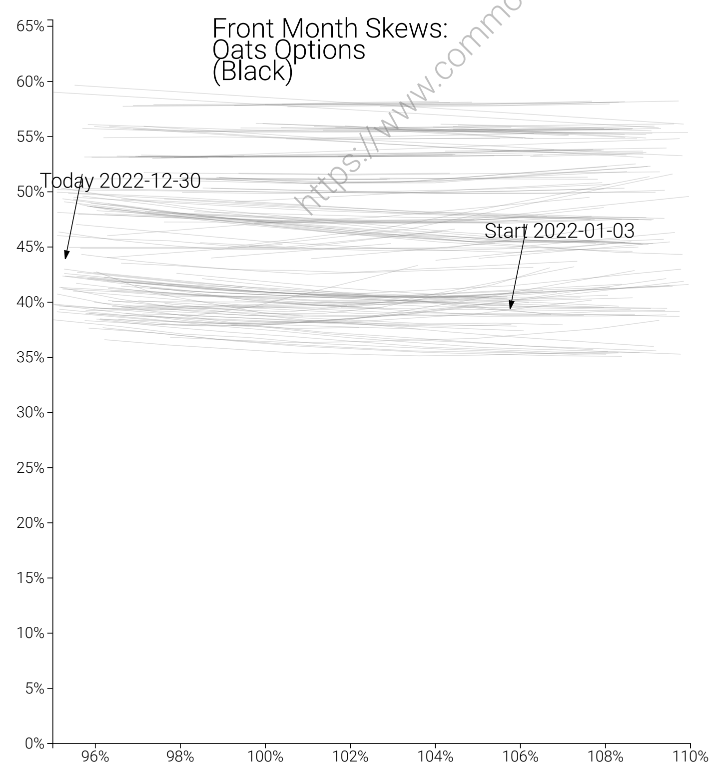

Price ($)
Today 2022-12-30
20230127
20230623
20240621

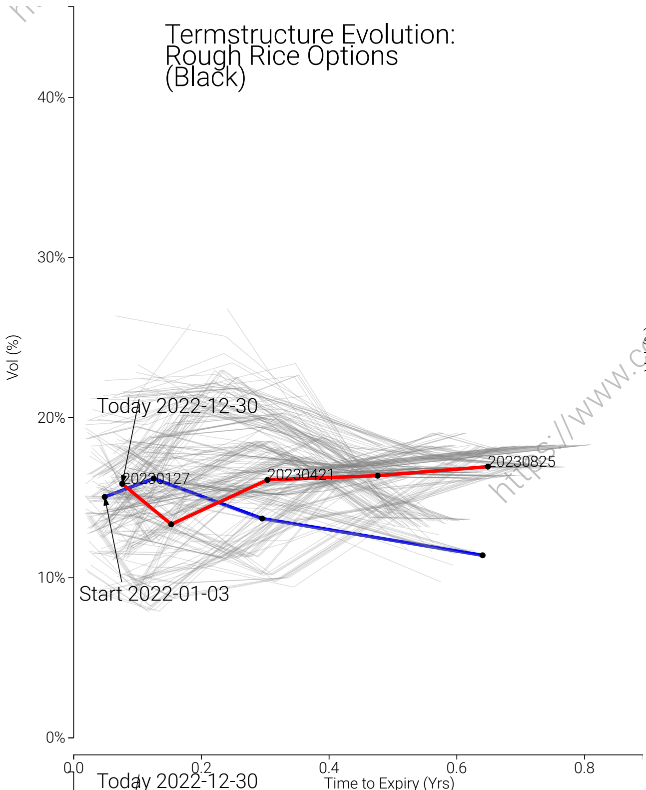

Front Month Skews:
KC HRW Wheat Options
(Black)
Today 2022-12-30
Start 2022-01-03

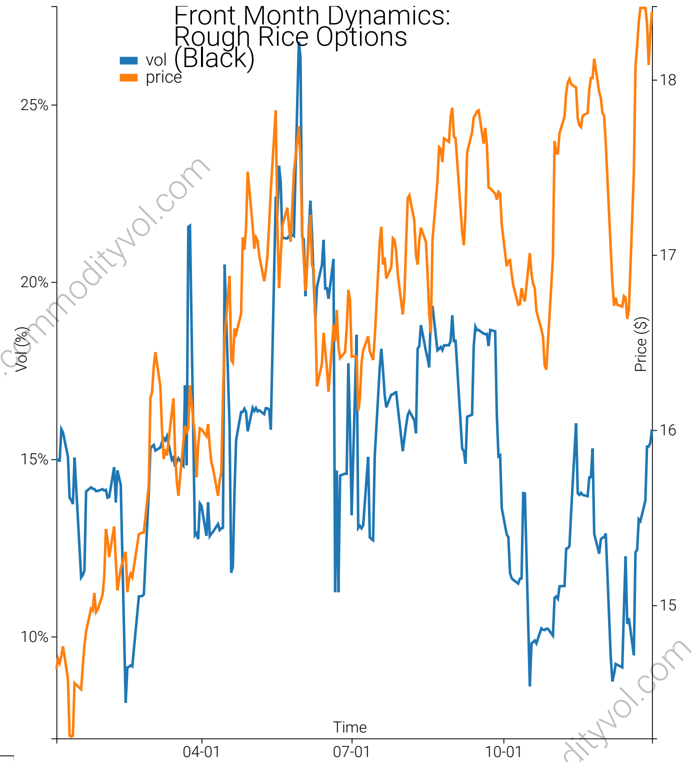

Termstructure Evolution:
Oats Options
(Black)
Vol (%)
140%
120%
100%
80%
60%
40%
20%
0%
Today 2022-12-30
20230127
20230421
20230623
Start 2022-01-03
0.0
0.1
0.2
0.3
0.4
0.5
Time to Expiry (Yrs)

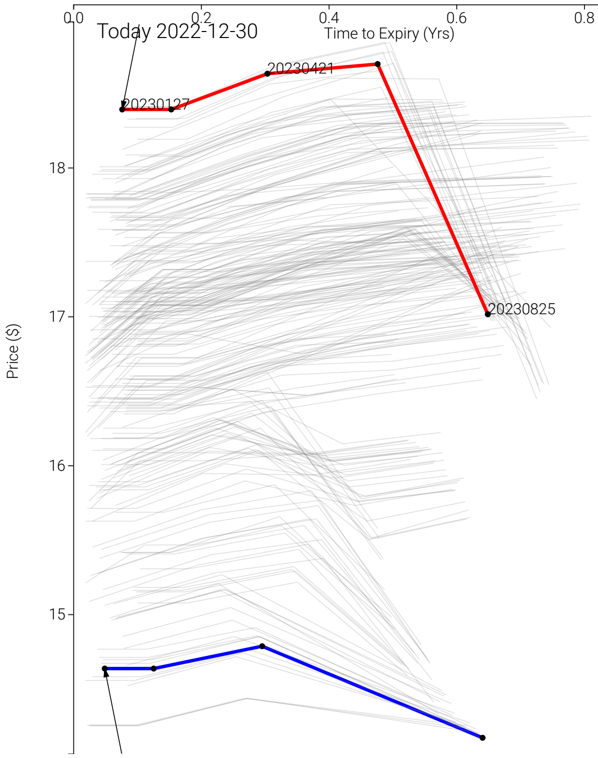

Front Month Dynamics:
Oats Options
(Black)
vol
price
Vol (%)
70%
60%
50%
40%
Price ($)
8
7
6
5
4
Time
04-01
07-01
10-01

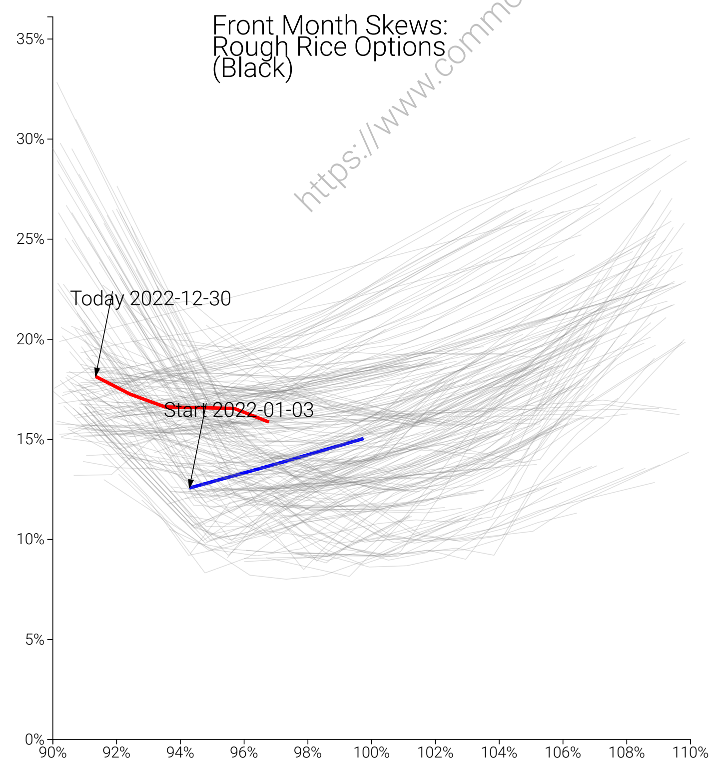

Price ($)
8
7
6
5
4
Start 2022-01-03
Today 2022-12-30
20230127
20230421
20230623

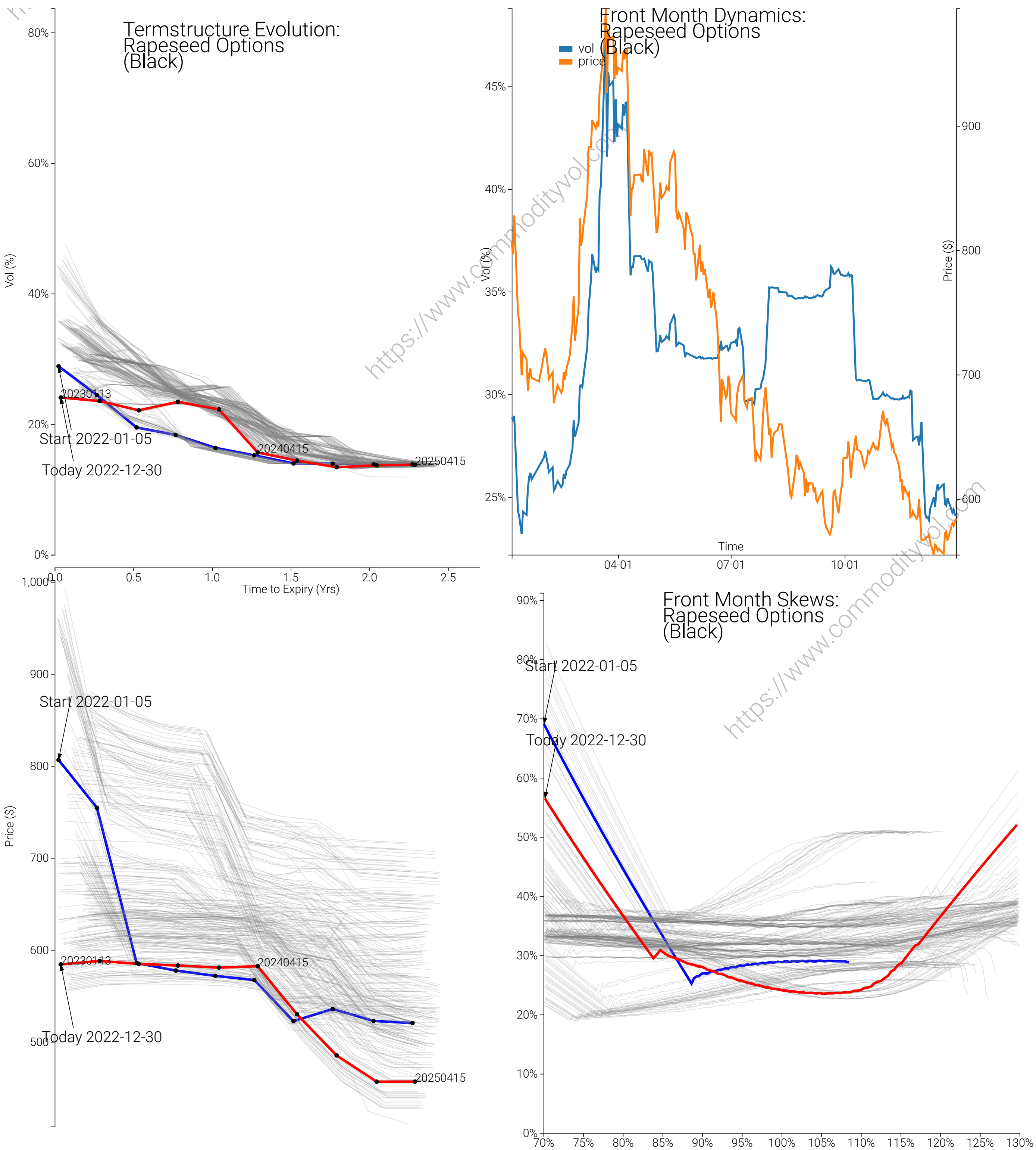

Front Month Skews:
Oats Options
(Black)
65%
60%
55%
50%
45%
40%
35%
30%
25%
20%
15%
10%
5%
0%
Today 2022-12-30
Start 2022-01-03
96%
98%
100%
102%
104%
106%
108%
110%


Termstructure Evolution:
Rough Rice Options
(Black)
Vol (%)
0%
10%
20%
30%
40%
Today 2022-12-30
Start 2022-01-03
20230127
20230421
20230825
0.0
0.2
0.4
0.6
0.8
Time to Expiry (Yrs)

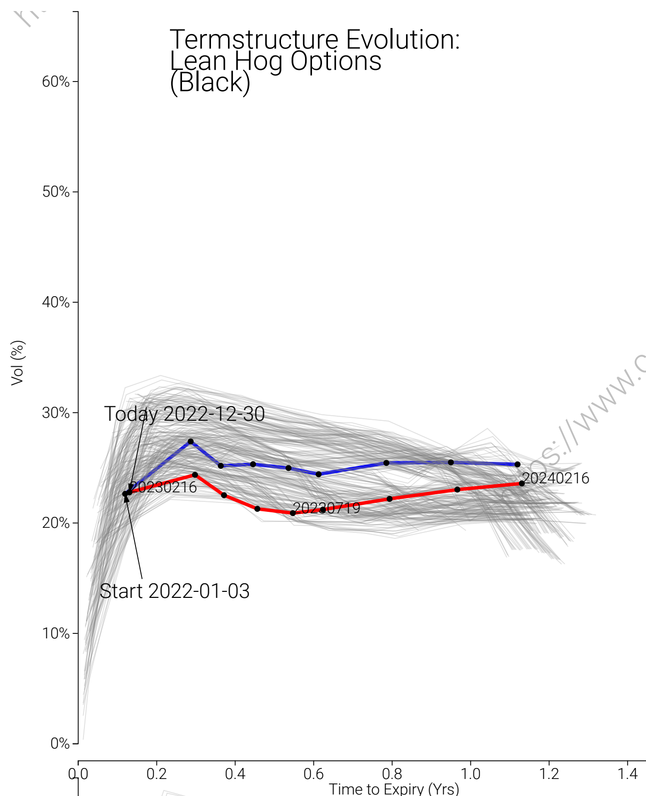

Front Month Dynamics:
Rough Rice Options
(Black)
vol
price
Vol (%)
Price ($)
10%
15%
20%
25%
15
16
17
18
04-01
07-01
10-01
Time

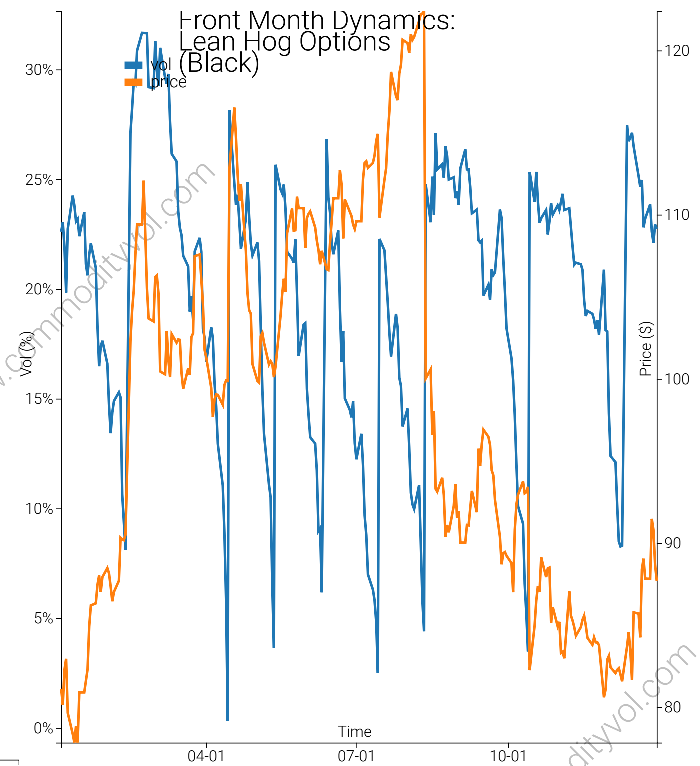

Today 2022-12-30
20230127
20230421
20230825
Price ($)
15
16
17
18

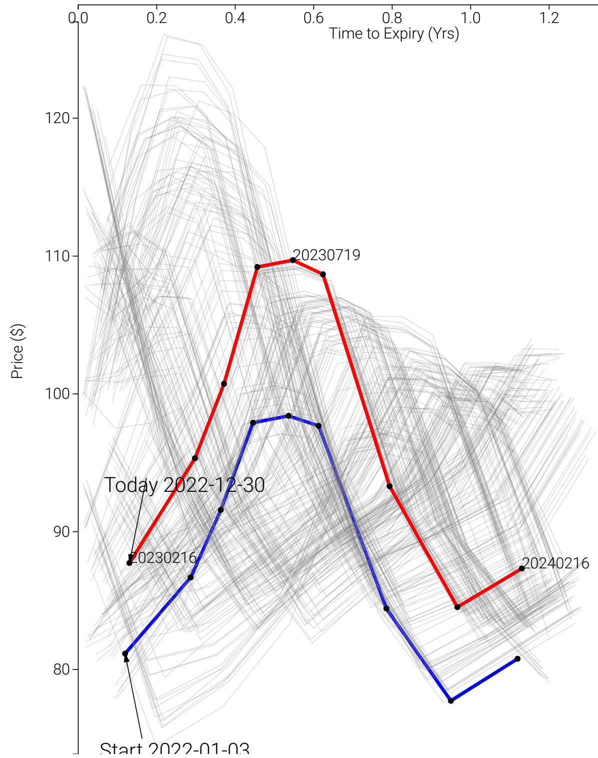

Front Month Skews:
Rough Rice Options
(Black)
Today 2022-12-30
Start 2022-01-03
0%
5%
10%
15%
20%
25%
30%
35%
90%
92%
94%
96%
98%
100%
102%
104%
106%
108%
110%

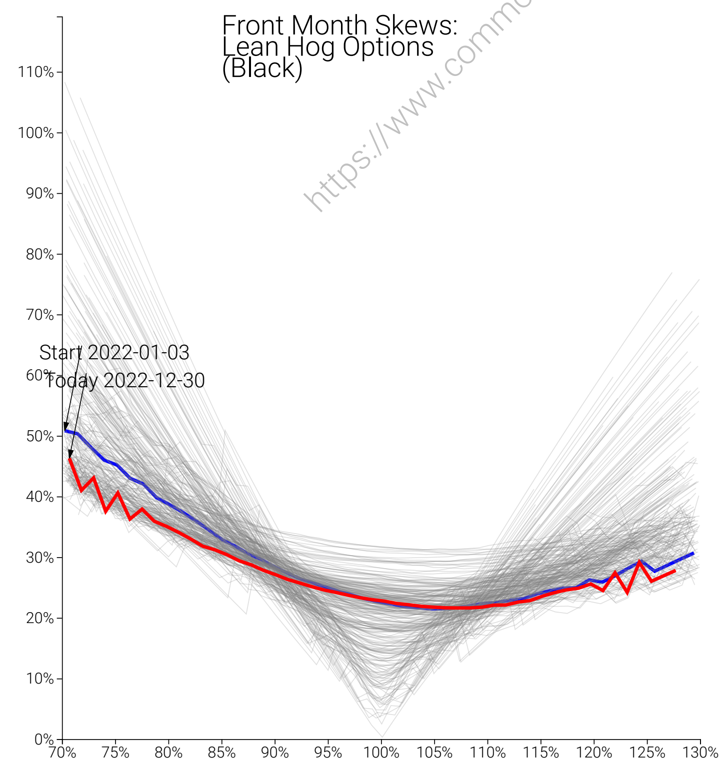

Termstructure Evolution:
Rapeseed Options
(Black)
Vol (%)
80%
60%
40%
20%
0%
20230113
20240415
20250415
Start 2022-01-05
Today 2022-12-30
0.0
0.5
1.0
1.5
2.0
2.5
Time to Expiry (Yrs)
Front Month Dynamics:
Rapeseed Options
(Black)
vol
price
45%
40%
35%
30%
25%
Price ($)
900
800
700
600
04-01
07-01
10-01
Time
Price ($)
1,000
900
800
700
600
500
Front Month Skews:
Rapeseed Options
(Black)
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
70%
75%
80%
85%
90%
95%
100%
105%
110%
115%
120%
125%
130%
https://www.commodityvol.com

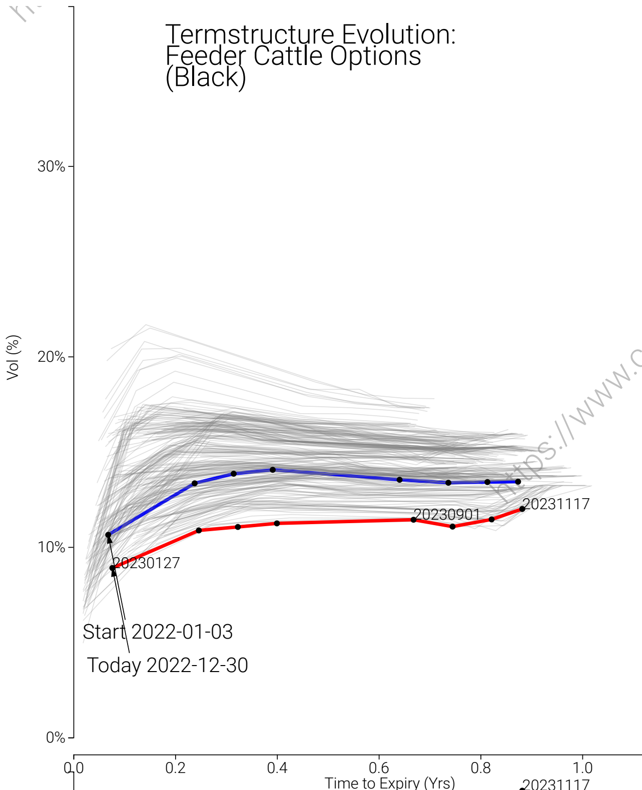
Ags: Proteins, Meats and so forth

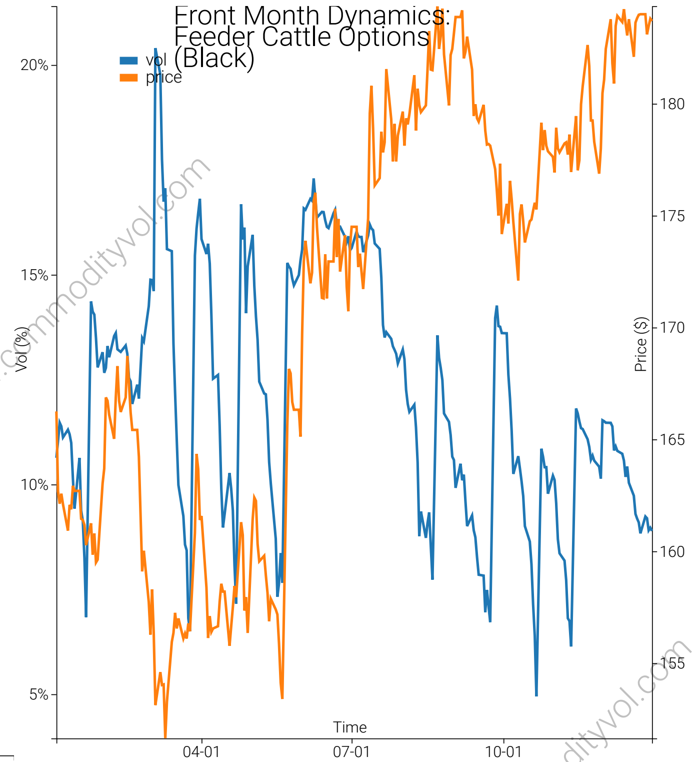

Termstructure Evolution:
Lean Hog Options
(Black)
Vol (%)
Time to Expiry (Yrs)
Today 2022-12-30
Start 2022-01-03
20230216
20230719
20240216
0%
10%
20%
30%
40%
50%
60%
0.0
0.2
0.4
0.6
0.8
1.0
1.2
1.4

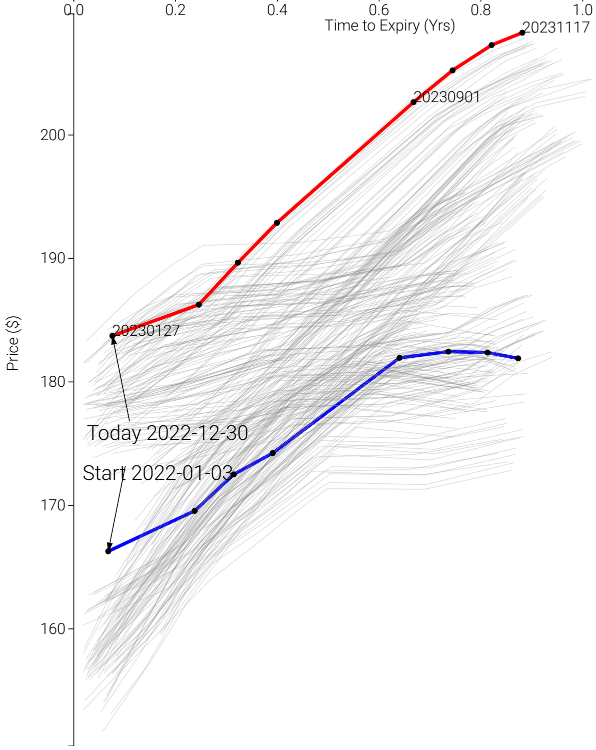

Front Month Dynamics:
Lean Hog Options
(Black)
vol
price
Vol (%)
Price ($)
Time
04-01
07-01
10-01
0%
5%
10%
15%
20%
25%
30%
80
90
100
110
120

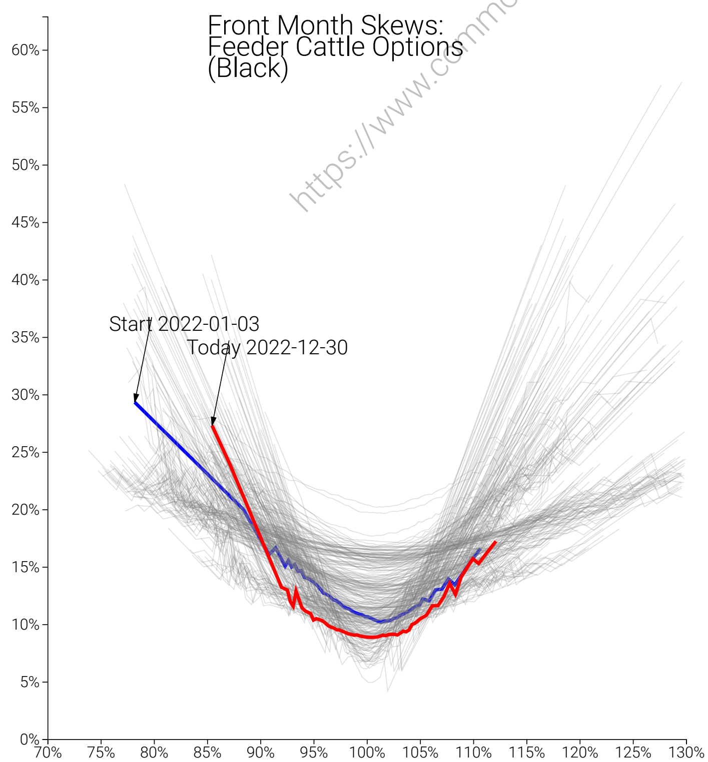

Price ($)
Today 2022-12-30
Start 2022-01-03
20230216
20230719
20240216
80
90
100
110
120

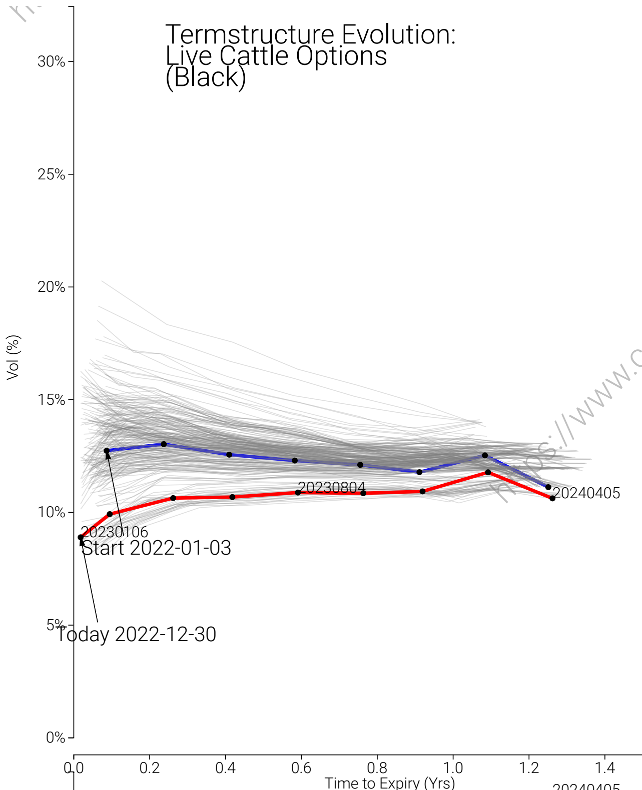

Front Month Skews:
Lean Hog Options
(Black)
Start 2022-01-03
Today 2022-12-30
0%
10%
20%
30%
40%
50%
60%
70%
80%
90%
100%
110%
70%
75%
80%
85%
90%
95%
100%
105%
110%
115%
120%
125%
130%

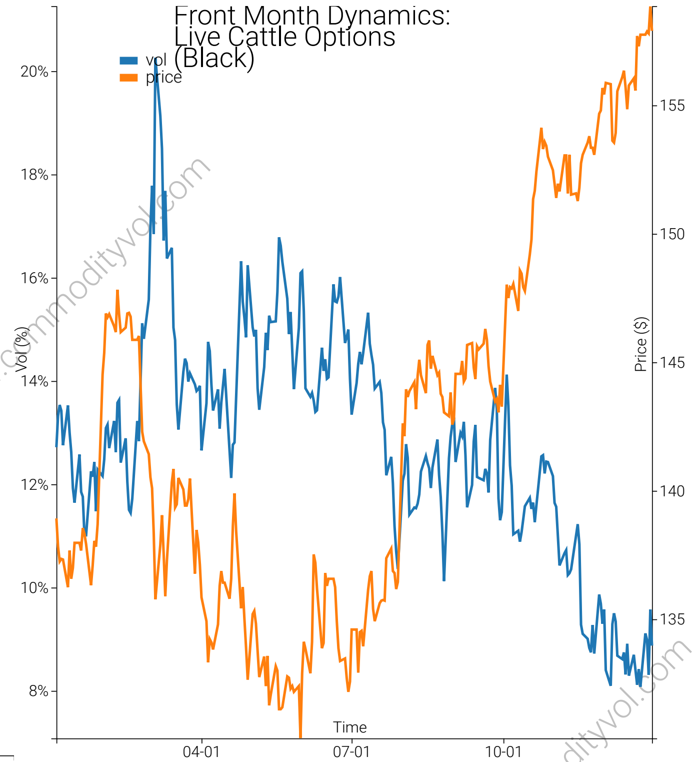

Termstructure Evolution:
Feeder Cattle Options
(Black)
Vol (%)
Time to Expiry (Yrs)
20230127
20230901
20231117
Start 2022-01-03
Today 2022-12-30

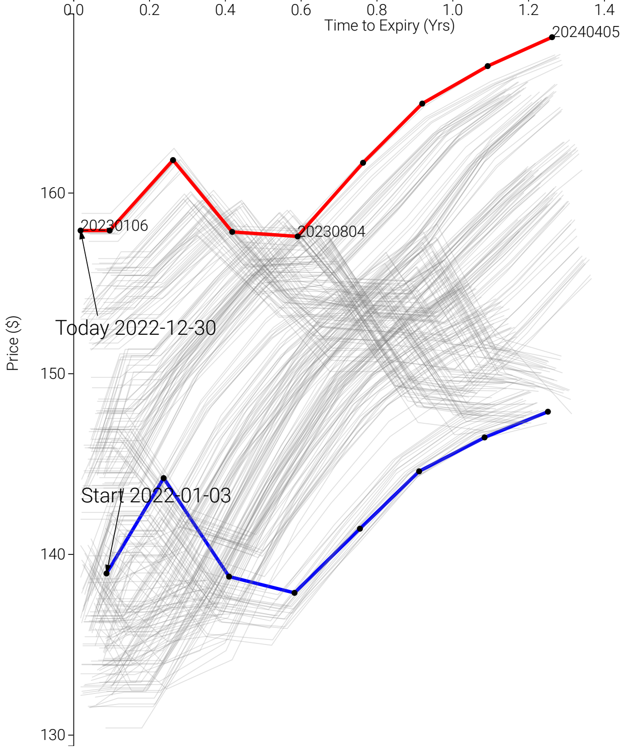

Front Month Dynamics:
Feeder Cattle Options
(Black)
vol
price
Vol (%)
Price ($)
Time
04-01
07-01
10-01

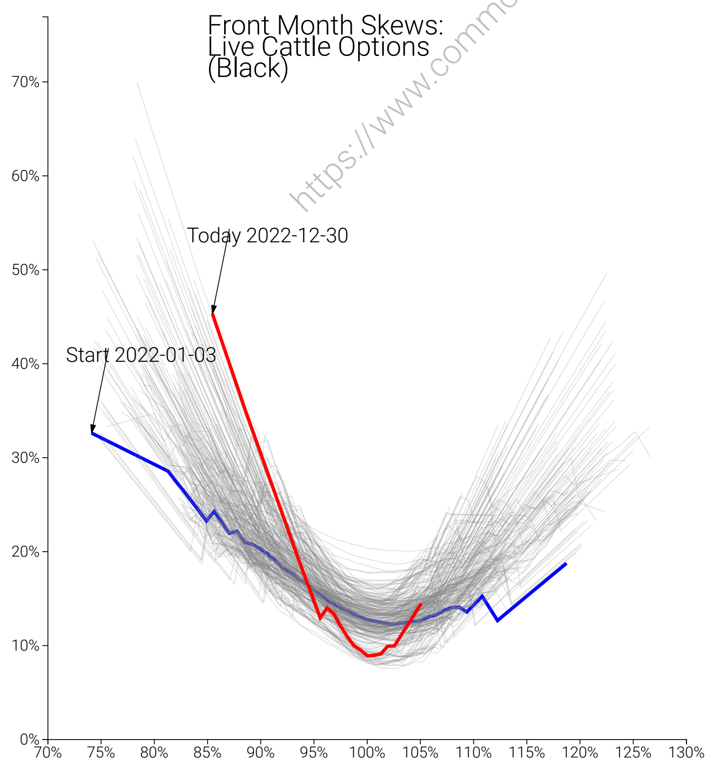

Price ($)
20230127
20230901
20231117
Today 2022-12-30
Start 2022-01-03

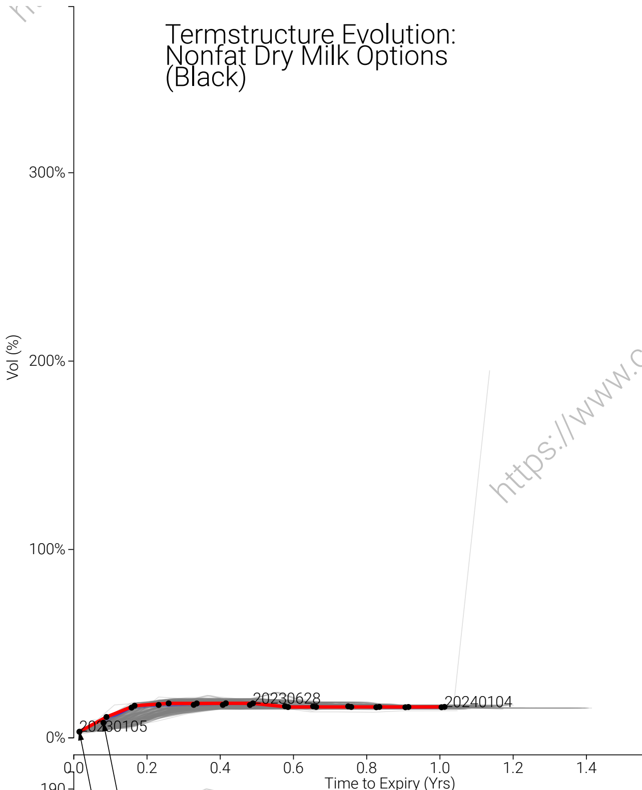

Front Month Skews:
Feeder Cattle Options
(Black)
Start 2022-01-03
Today 2022-12-30

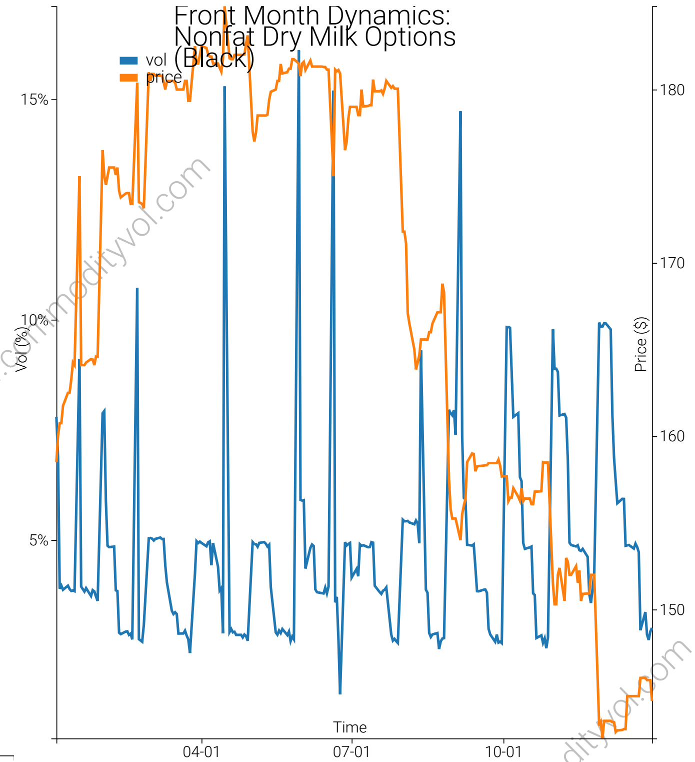

Termstructure Evolution:
Live Cattle Options
(Black)
Vol (%)
Time to Expiry (Yrs)
20230106
20230804
20240405
Start 2022-01-03
Today 2022-12-30

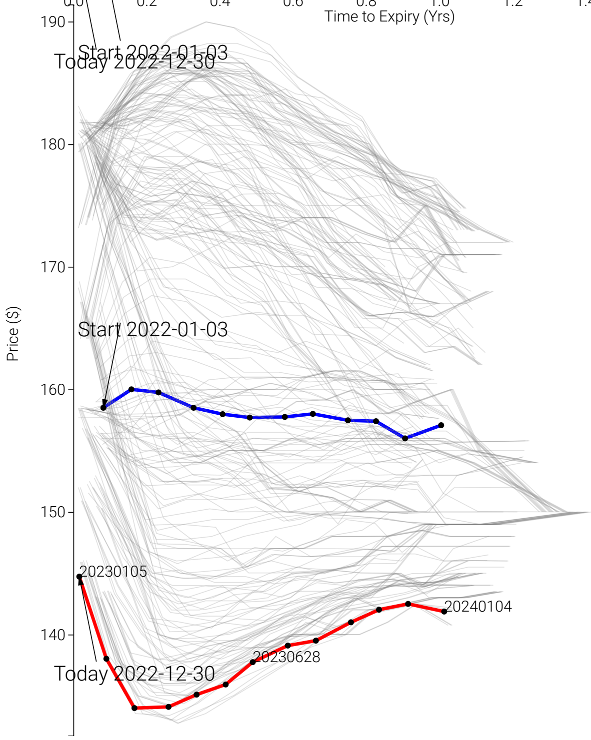

Front Month Dynamics:
Live Cattle Options
(Black)
vol
price
Vol (%)
Price ($)
Time
04-01
07-01
10-01

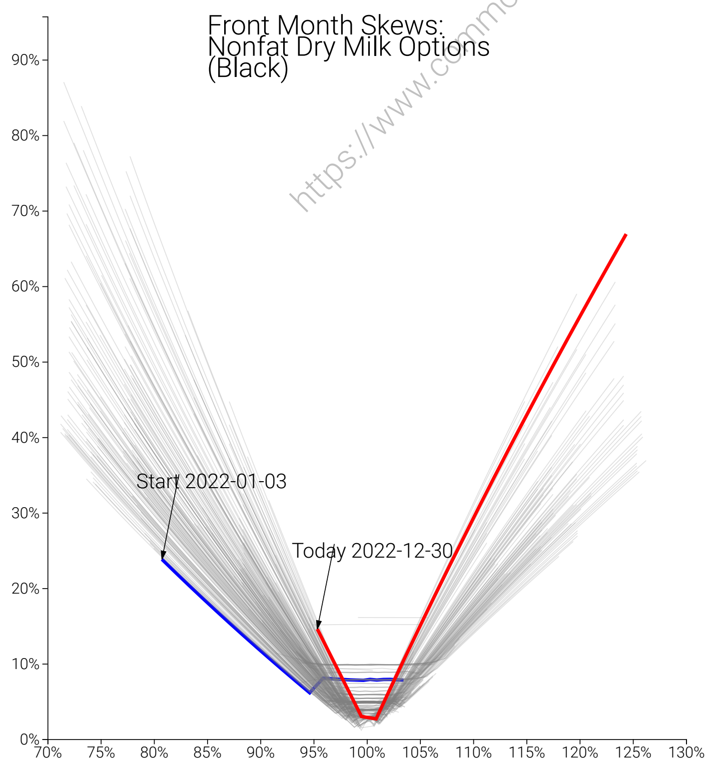

Price ($)
20240405
20230106
20230804
Today 2022-12-30
Start 2022-01-03

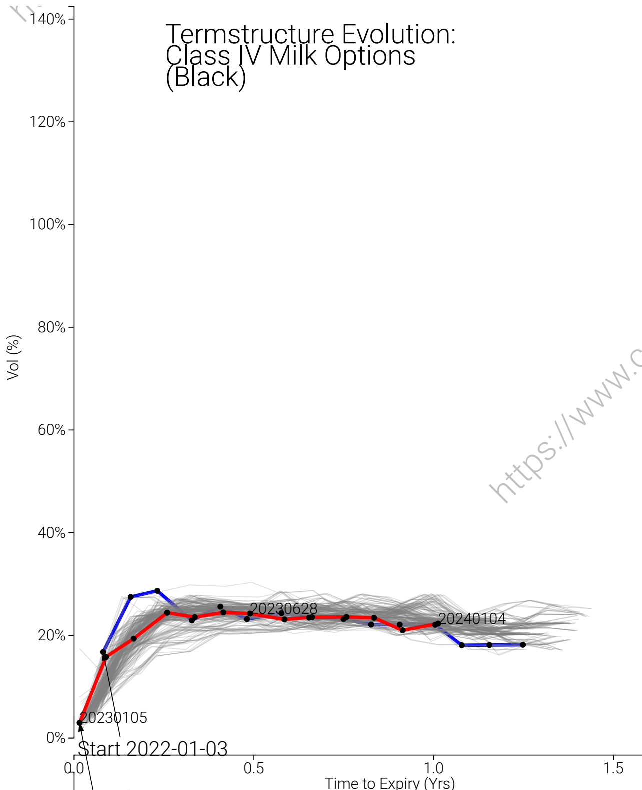

Front Month Skews:
Live Cattle Options
(Black)
Today 2022-12-30
Start 2022-01-03


Termstructure Evolution:
Nonfat Dry Milk Options
(Black)
Vol (%)
300%
200%
100%
0%
20230105
20230628
20240104
0.0
0.2
0.4
0.6
0.8
1.0
1.2
1.4
Time to Expiry (Yrs)
Start 2022-01-03
Today 2022-12-30

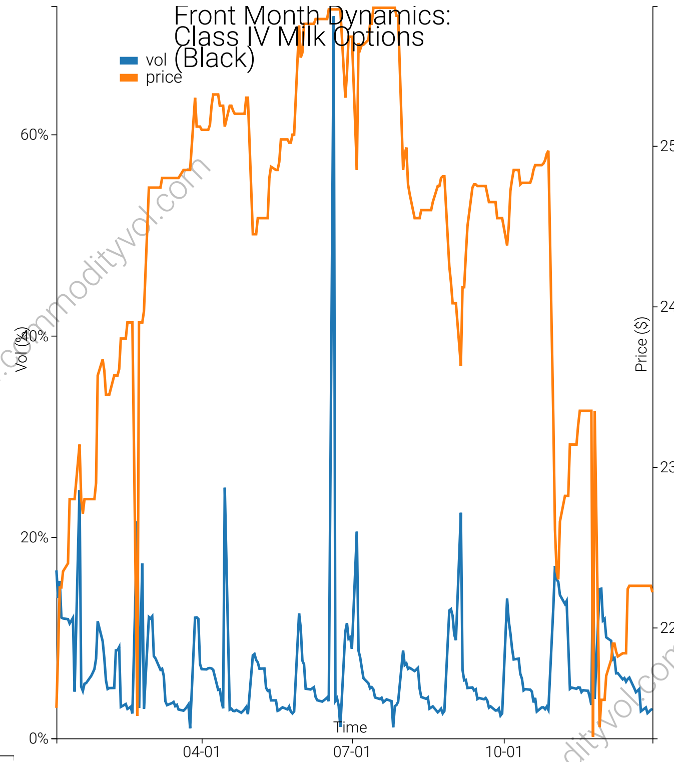

Front Month Dynamics:
Nonfat Dry Milk Options
(Black)
vol
price
15%
10%
5%
Vol (%)
180
170
160
150
Price ($)
Time
04-01
07-01
10-01


190
180
170
160
150
140
Price ($)
Start 2022-01-03
20230105
20230628
20240104
Today 2022-12-30

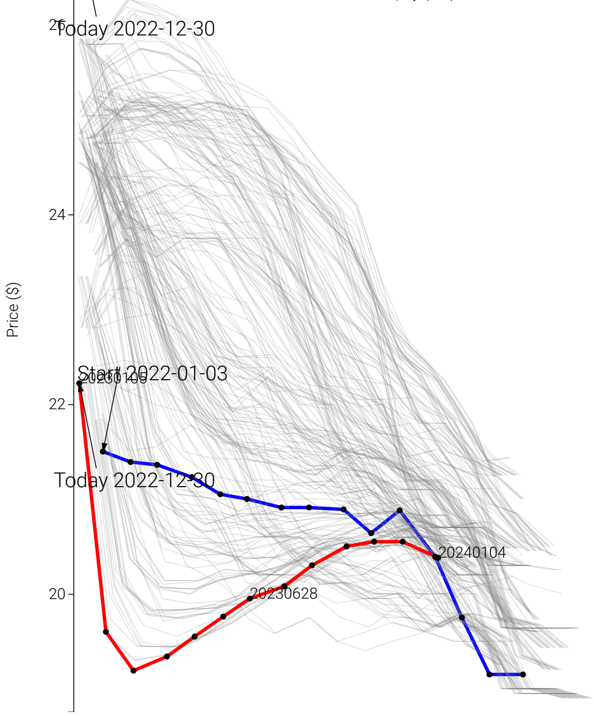

Front Month Skews:
Nonfat Dry Milk Options
(Black)
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
Start 2022-01-03
Today 2022-12-30
70%
75%
80%
85%
90%
95%
100%
105%
110%
115%
120%
125%
130%



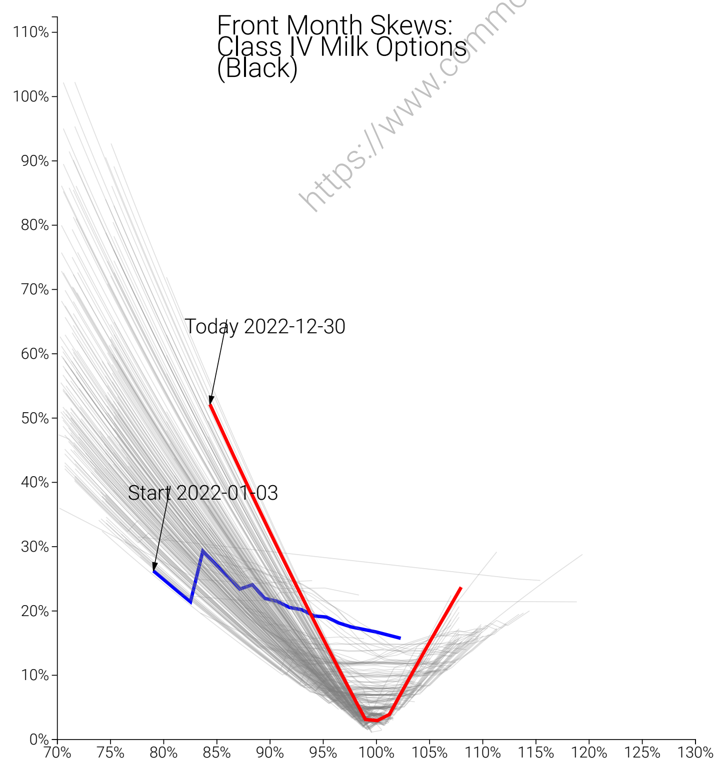
Termstructure Evolution:
Class IV Milk Options
(Black)
140%
120%
100%
80%
60%
40%
20%
0%
Vol (%)
20230628
20240104
20230105
Start 2022-01-03
Today 2022-12-30
0.0
0.5
1.0
1.5
Time to Expiry (Yrs)



Front Month Dynamics:
Class IV Milk Options
(Black)
vol
price
60%
40%
20%
0%
Vol (%)
Price ($)
25
24
23
22
Time
04-01
07-01
10-01

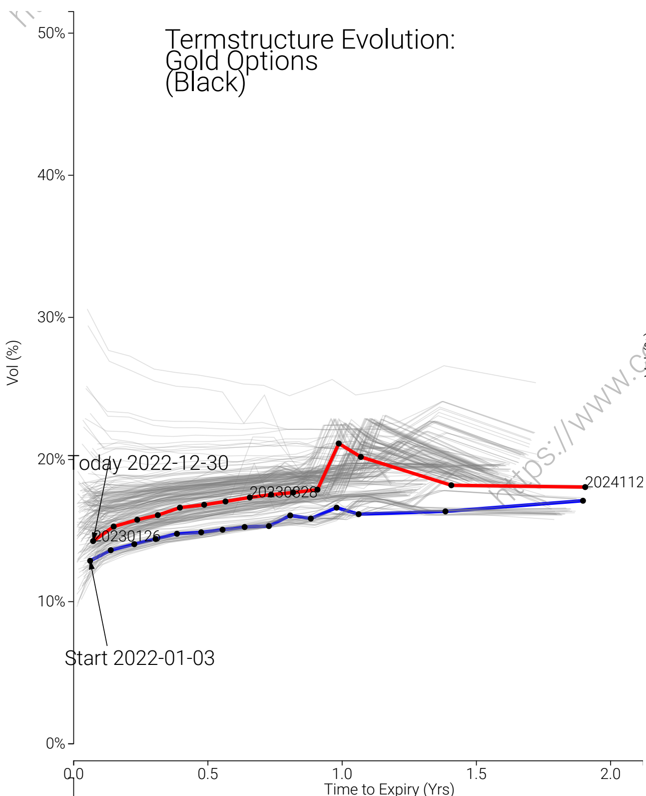


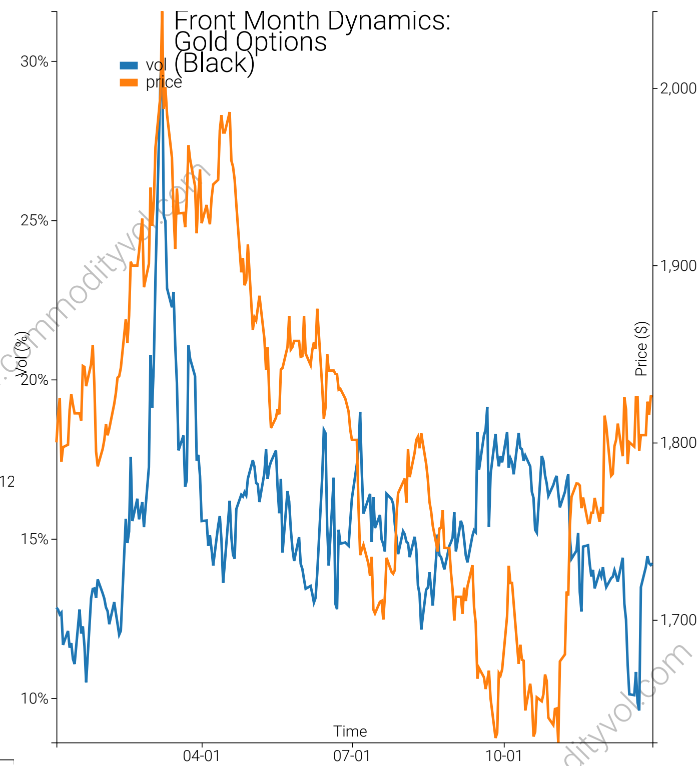
26
24
22
20
Price ($)
Start 2022-01-03
20230105
Today 2022-12-30
20240104
20230628

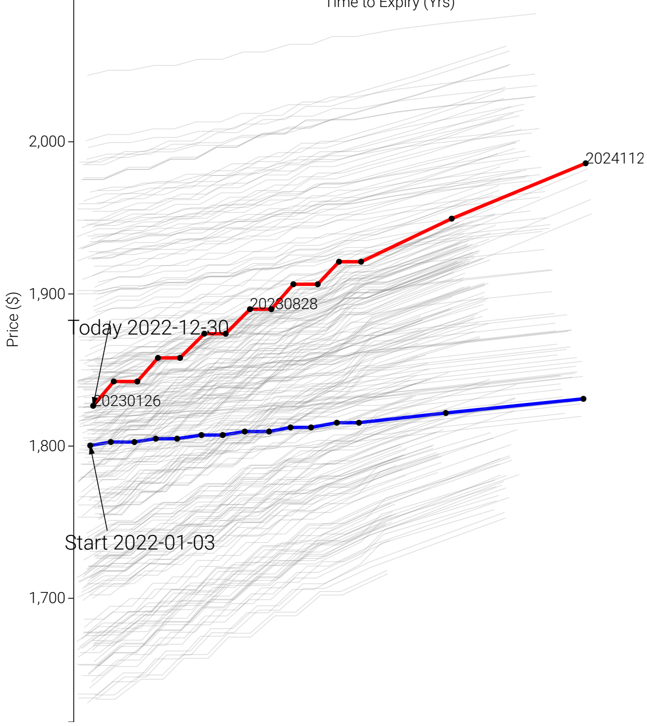


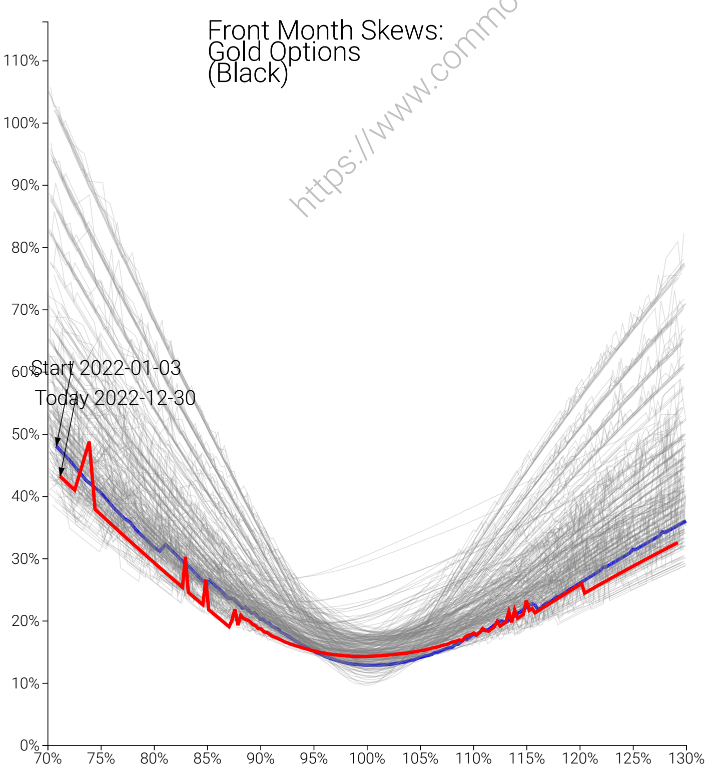
Front Month Skews:
Class IV Milk Options
(Black)
110%
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
Today 2022-12-30
Start 2022-01-03
70%
75%
80%
85%
90%
95%
100%
105%
110%
115%
120%
125%
130%

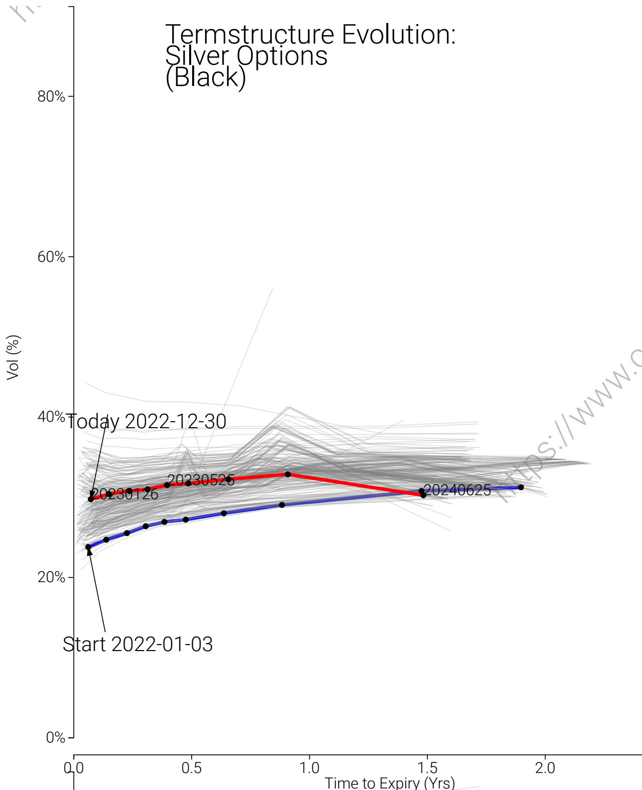
Metals

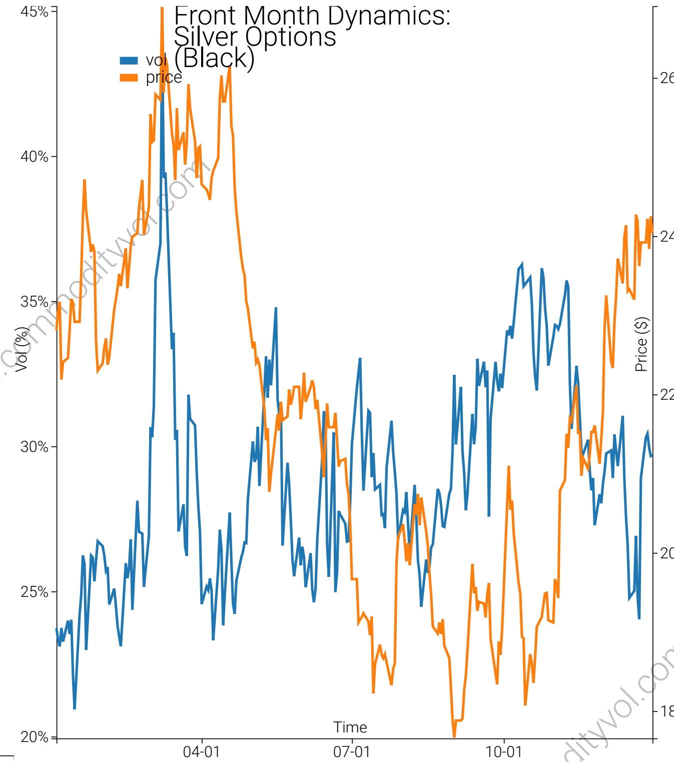

Termstructure Evolution:
Gold Options
(Black)
Vol (%)
50%
40%
30%
20%
10%
0%
Today 2022-12-30
20230828
20230126
2024112
Start 2022-01-03
0.0
0.5
1.0
1.5
2.0
Time to Expiry (Yrs)

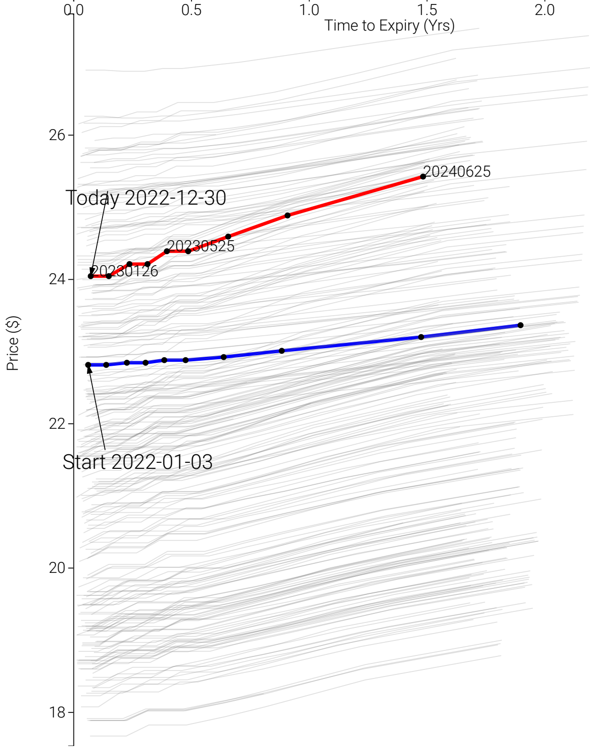

Front Month Dynamics:
Gold Options
(Black)
vol
price
Vol (%)
Price ($)
30%
25%
20%
15%
10%
2,000
1,900
1,800
1,700
Time
04-01
07-01
10-01

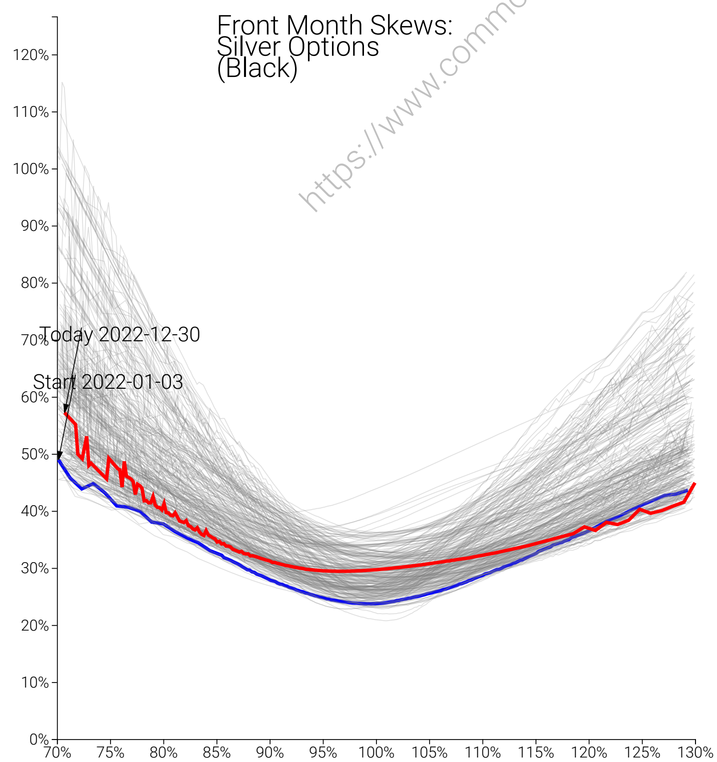

Price ($)
2,000
1,900
1,800
1,700
2024112
20230828
Today 2022-12-30
20230126
Start 2022-01-03

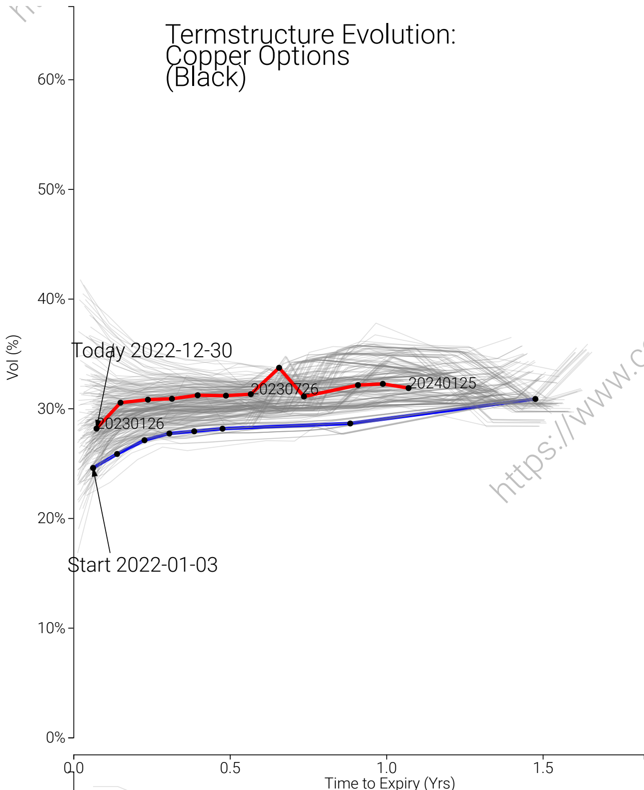

Front Month Skews:
Gold Options
(Black)
110%
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
Start 2022-01-03
Today 2022-12-30
70%
75%
80%
85%
90%
95%
100%
105%
110%
115%
120%
125%
130%

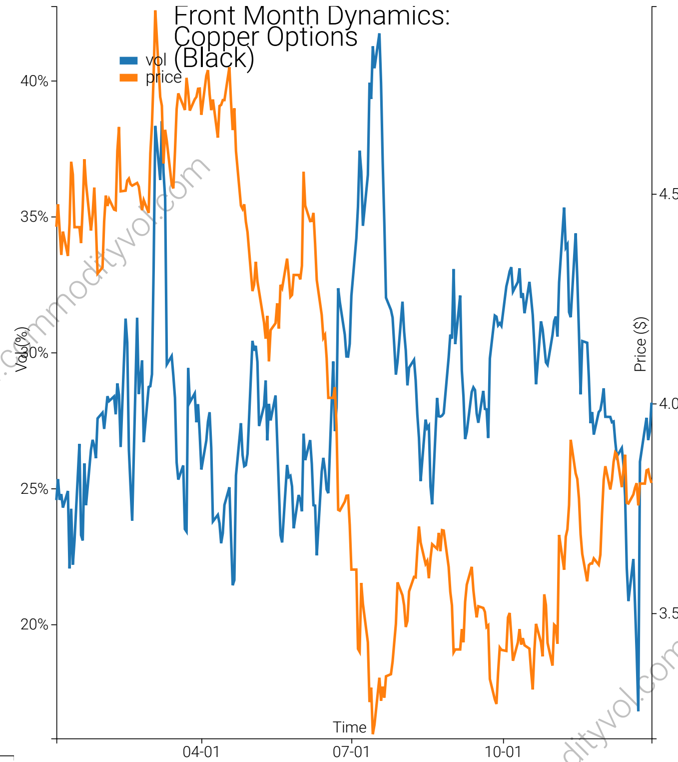

Termstructure Evolution:
Silver Options
(Black)
Vol (%)
80%
60%
40%
20%
0%
Today 2022-12-30
20230126
20230525
20240625
Start 2022-01-03
0.0
0.5
1.0
1.5
2.0
Time to Expiry (Yrs)

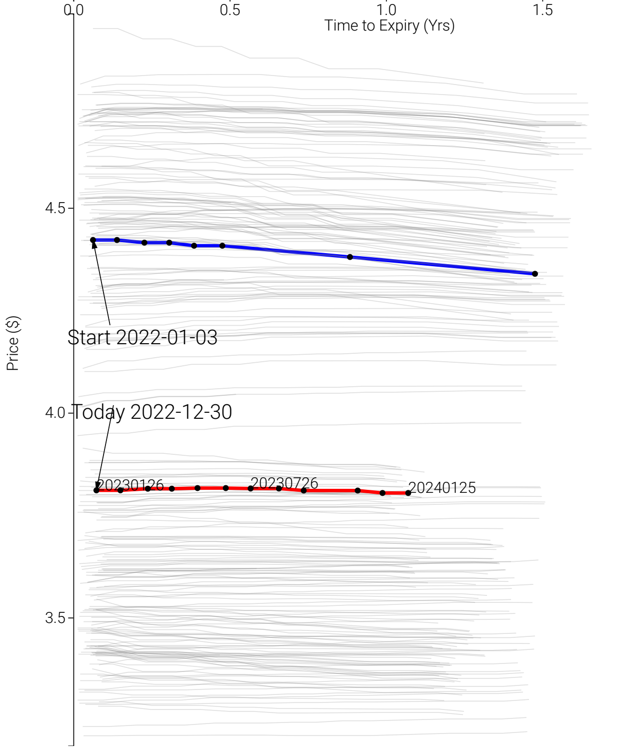

Front Month Dynamics:
Silver Options
(Black)
vol
price
Vol (%)
Price ($)
45%
40%
35%
30%
25%
20%
26
24
22
20
18
Time
04-01
07-01
10-01

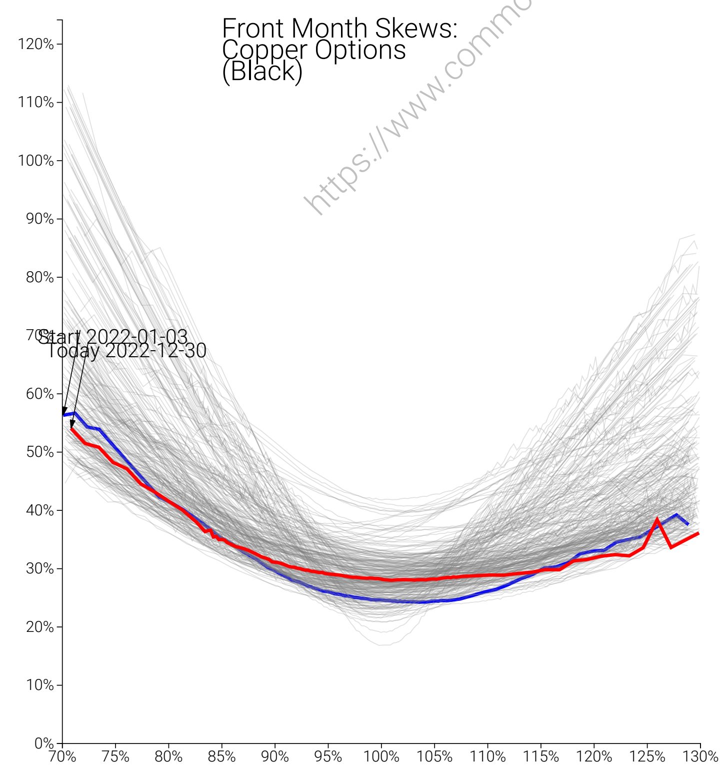

Price ($)
26
24
22
20
18
Today 2022-12-30
20230126
20230525
20240625
Start 2022-01-03

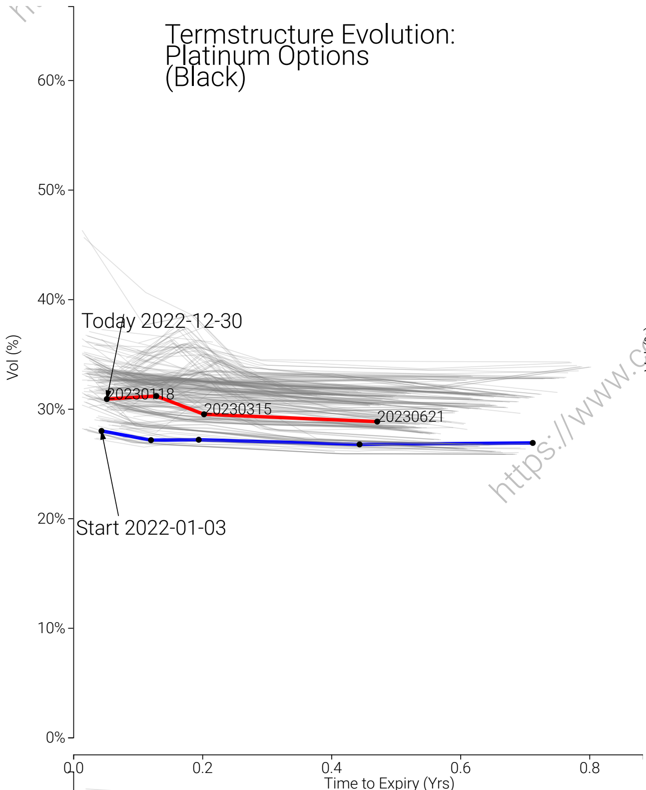

Front Month Skews:
Silver Options
(Black)
120%
110%
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
Today 2022-12-30
Start 2022-01-03
70%
75%
80%
85%
90%
95%
100%
105%
110%
115%
120%
125%
130%

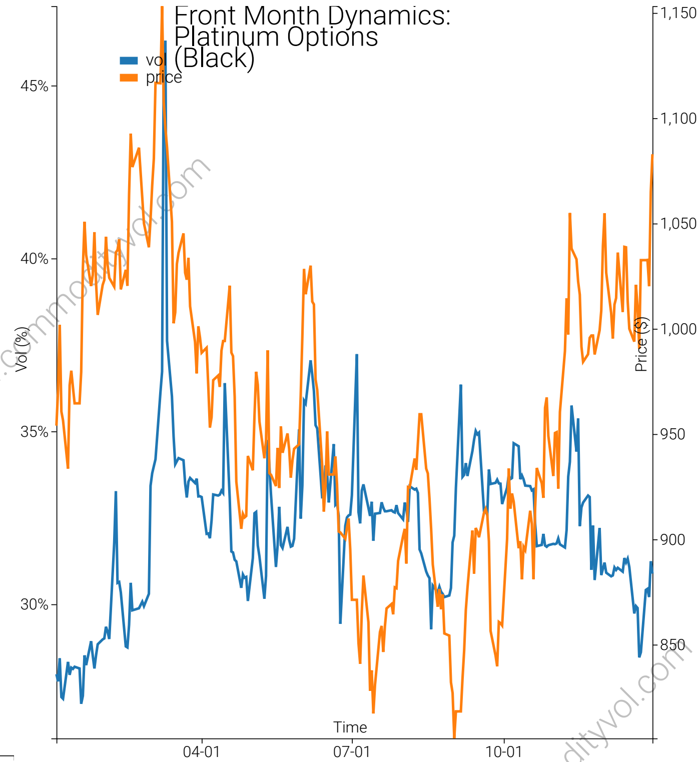

Termstructure Evolution:
Copper Options
(Black)
Vol (%)
Today 2022-12-30
Start 2022-01-03
20230126
20230726
20240125
Time to Expiry (Yrs)
0%
10%
20%
30%
40%
50%
60%
0.0
0.5
1.0
1.5

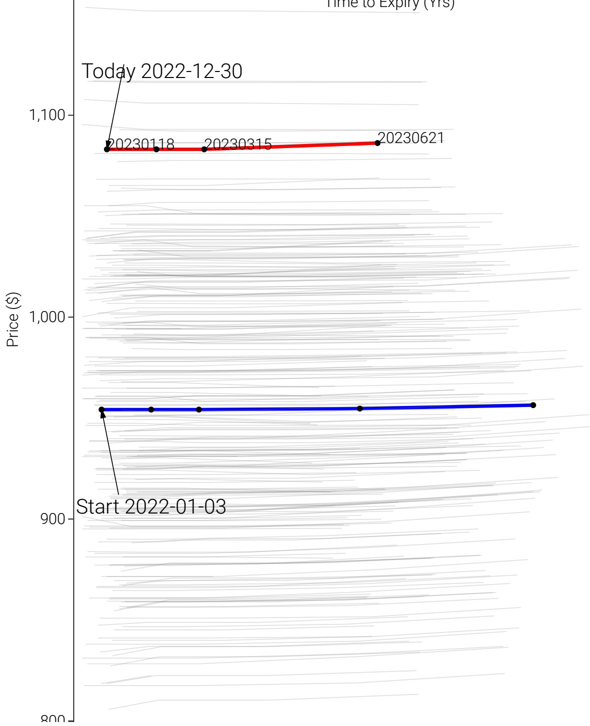

Front Month Dynamics:
Copper Options
(Black)
vol
price
Vol (%)
Price ($)
Time
04-01
07-01
10-01
20%
25%
30%
35%
40%
3.5
4.0
4.5
https://www.commodityvol.com

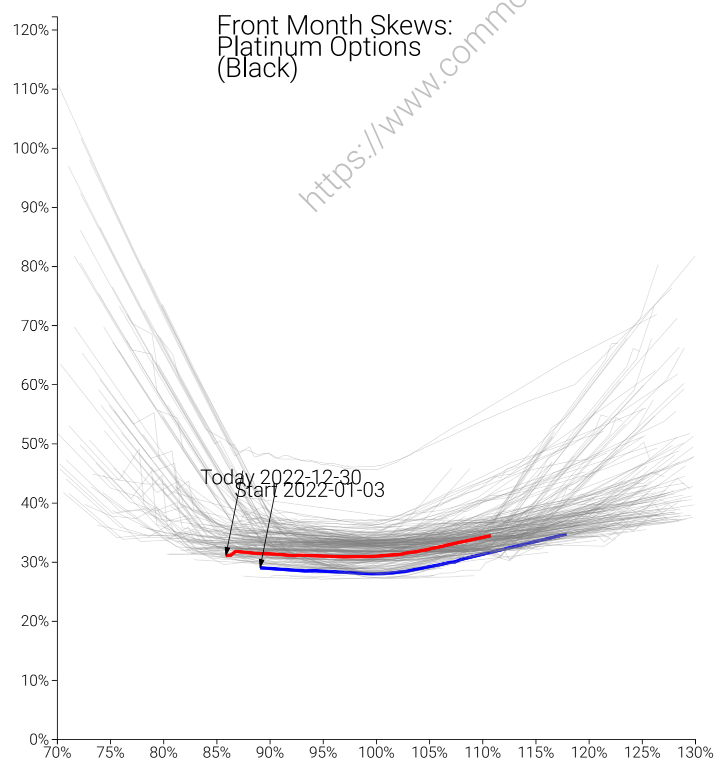

Price ($)
Start 2022-01-03
Today 2022-12-30
20230126
20230726
20240125
3.5
4.0
4.5

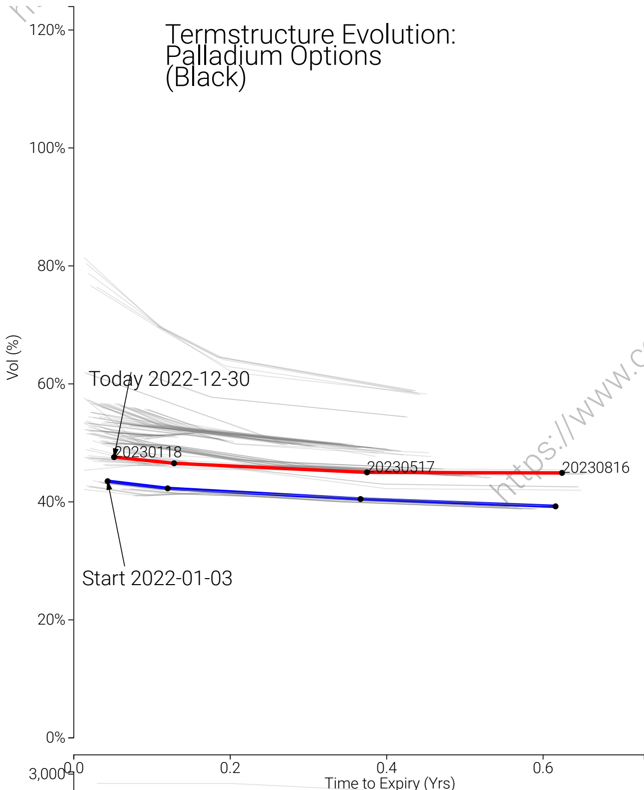

Front Month Skews:
Copper Options
(Black)
Start 2022-01-03
Today 2022-12-30
https://www.commodityvol.com
0%
10%
20%
30%
40%
50%
60%
70%
80%
90%
100%
110%
120%
70%
75%
80%
85%
90%
95%
100%
105%
110%
115%
120%
125%
130%

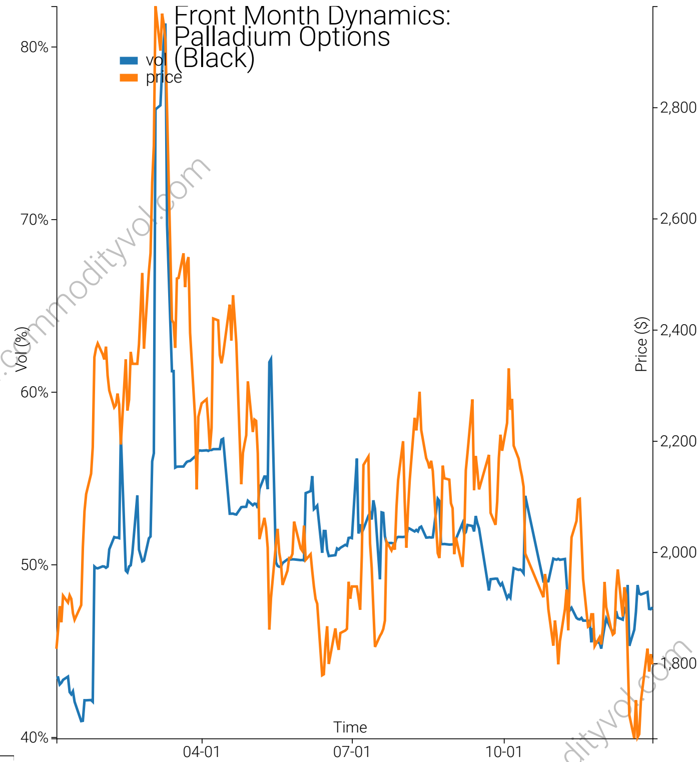

Termstructure Evolution:
Platinum Options
(Black)
Vol (%)
60%
50%
40%
30%
20%
10%
0%
Today 2022-12-30
20230118
20230315
20230621
Start 2022-01-03
0.0
0.2
0.4
0.6
0.8
Time to Expiry (Yrs)

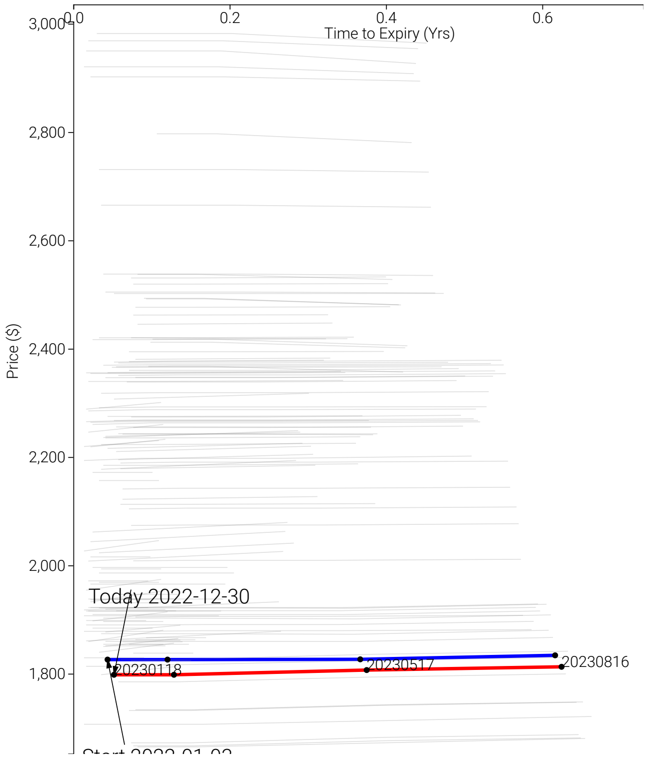

Front Month Dynamics:
Platinum Options
(Black)
vol
price
Vol (%)
45%
40%
35%
30%
Price ($)
1,150
1,100
1,050
1,000
950
900
850
Time
04-01
07-01
10-01

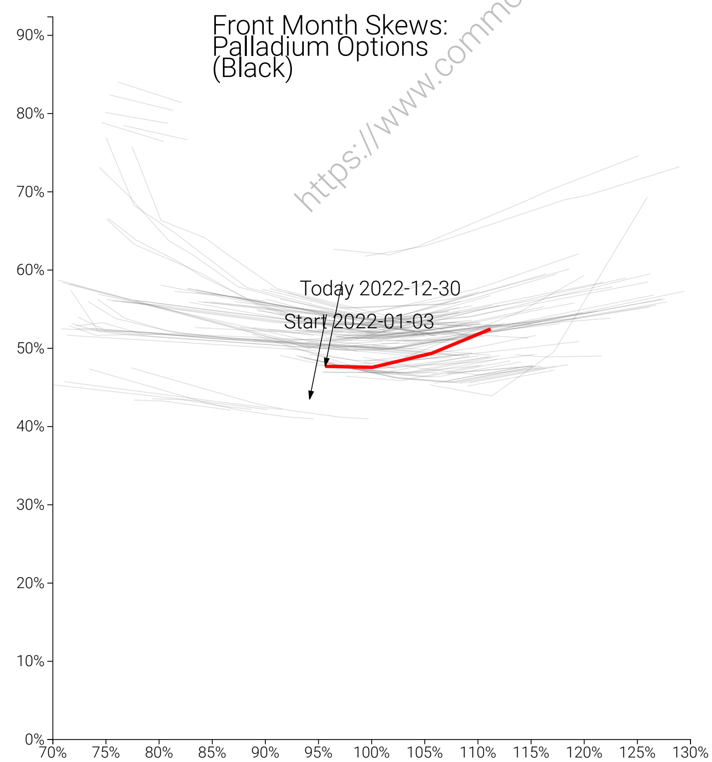

Price ($)
1,100
1,000
900
800
Today 2022-12-30
20230118
20230315
20230621
Start 2022-01-03


Front Month Skews:
Platinum Options
(Black)
120%
110%
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
Today 2022-12-30
Start 2022-01-03
70%
75%
80%
85%
90%
95%
100%
105%
110%
115%
120%
125%
130%


Termstructure Evolution:
Palladium Options
(Black)
Vol (%)
120%
100%
80%
60%
40%
20%
0%
Today 2022-12-30
Start 2022-01-03
20230118
20230517
20230816
0.0
0.2
0.4
0.6
Time to Expiry (Yrs)


Front Month Dynamics:
Palladium Options
(Black)
vol
price
Vol (%)
80%
70%
60%
50%
40%
Price ($)
2,800
2,600
2,400
2,200
2,000
1,800
Time
04-01
07-01
10-01


Price ($)
3,000
2,800
2,600
2,400
2,200
2,000
1,800
Today 2022-12-30
20230118
20230517
20230816

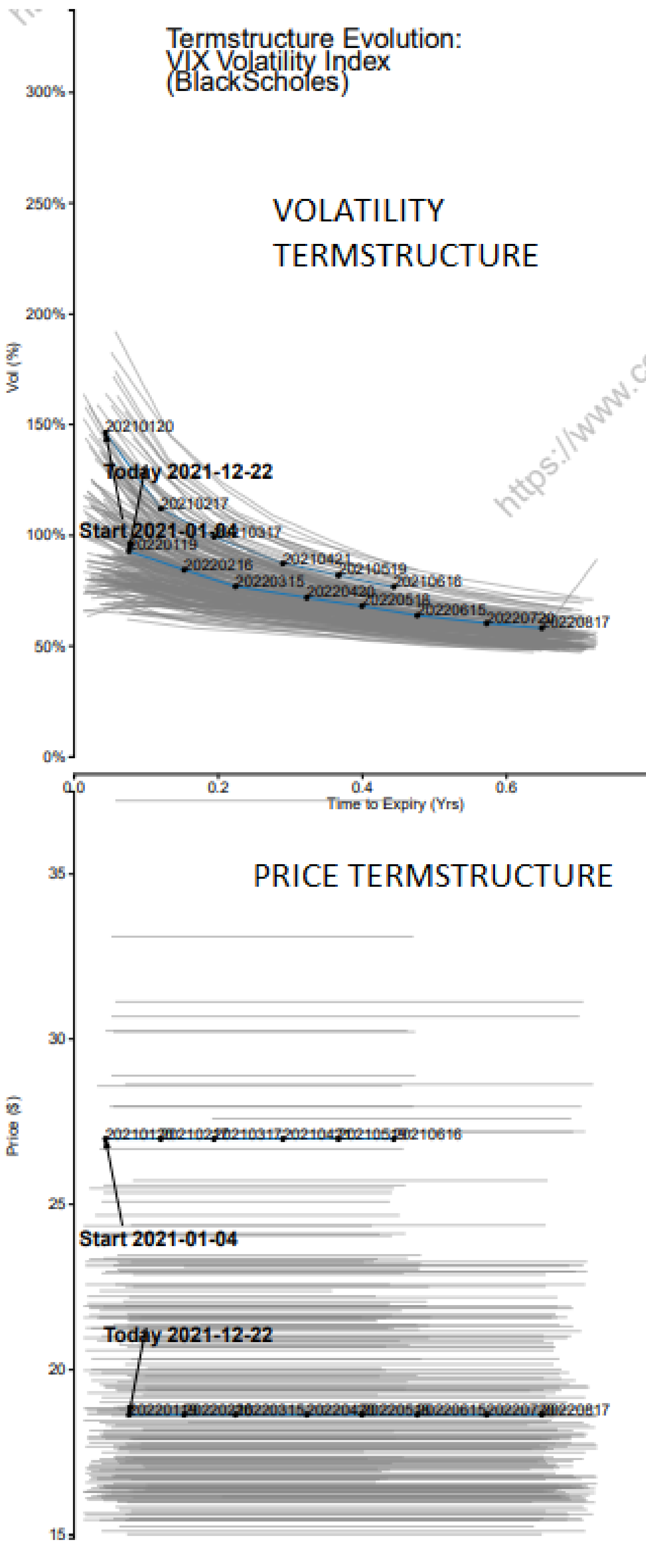

Front Month Skews:
Palladium Options
(Black)
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
Today 2022-12-30
Start 2022-01-03
70%
75%
80%
85%
90%
95%
100%
105%
110%
115%
120%
125%
130%

Explanation:

The document is composed of two parts. There is a tabular portion which summarizes the changes in front month futures prices and the changes in the at the money front month implied volatility. The results are presented as raw differences and percentage changes. The plots in this document try to give a feel for the evolution of the futures and options for each product type. The skew/termstructure/xyplots are broken out by major asset classes: Indexes, Fixed Income and so on.

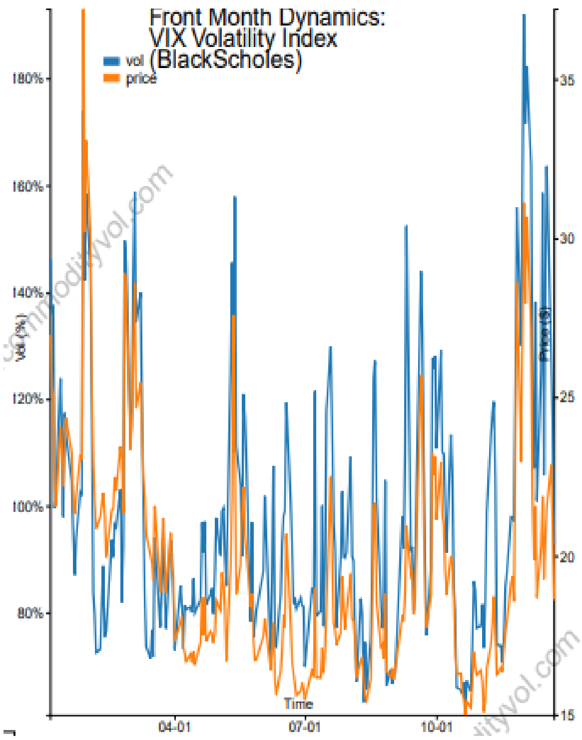
At the Money Volatilty and Price Term Structures:

Stacked on top of the other on the left hand side, see the termstructures of vol and the (underlying) futures contract price.



The starting curve is the termstructure at the beginning of the period. This curve is labelled start and is typically colored blue. The ending curve is typically colored red and denoted by the text: Today. The greyed out lines are the termstructures for each day of the period. The hope is that the range of movements becomes apparent.

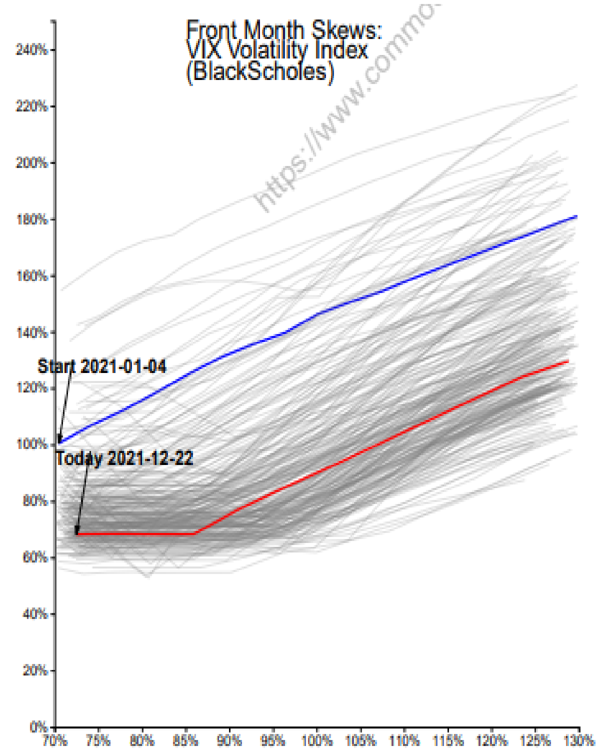
Front Month At the Money Volatilty and Front Month Price Over the Year:
On the right hand panel we have the price and implied volatility of the front month contract.



At the money implied volatility is shown in blue and the axis on the left should be used to read off the values. The front month futures price is in orange and the right hand axis is where its value can be read.

Front Month Skew:

On the right hand in the bottom panel we have the starting front month skew and the ending front month skew.



The front month skew is shown for the starting date. The starting curve is labelled as 'Start' and captioned with the date. The starting curve is blue. Conversely, the ending curve is shown in red and labeled Today. The y-axis shows the implied volatility and the x-axis shows the moneyness. The moneyness is a way to normalize the skew so that it is comparable across time.

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