



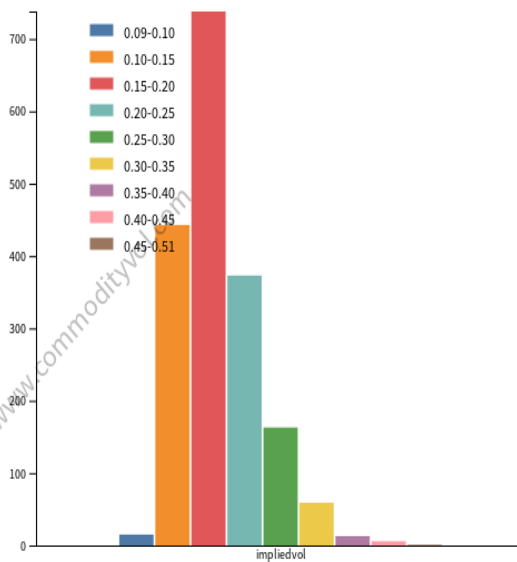
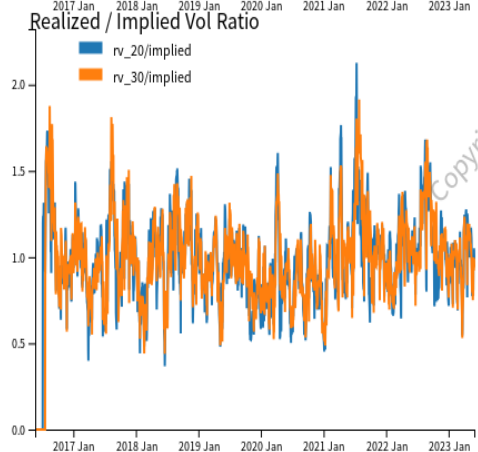
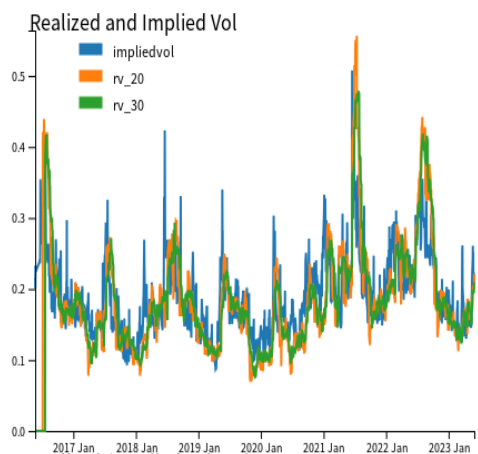
Welcome to our May 2023 Recap:

We are pleased to welcome you to our May 2023 Report.

May was a month where the markets were treated to the 'Great Debt Ceiling' theater. What used to be a rare opportunity for US politicians to grandstand and then kick the can down the road, is now turning into a common occurrence. It has become so common place that neither equity markets nor US Government debt markets paid heed this time around. To be fair, the futures prices for the Notes and Bonds fell, but that was more in response to the Fed increase in interest rates than the grand theater. The real fireworks were being exhibited in Agricultural commodities, both in terms of price and vols. Energy also had some flash. Equity indexes were stuck in their trance like state. Everything is smooth sailing in the world of equities. There is a lot of grasping at the recession/no recession question.

As foreshadowing, we show Soybean vol's realized/IMPLIED statistics. Both realized and IMPLIED start to spike.

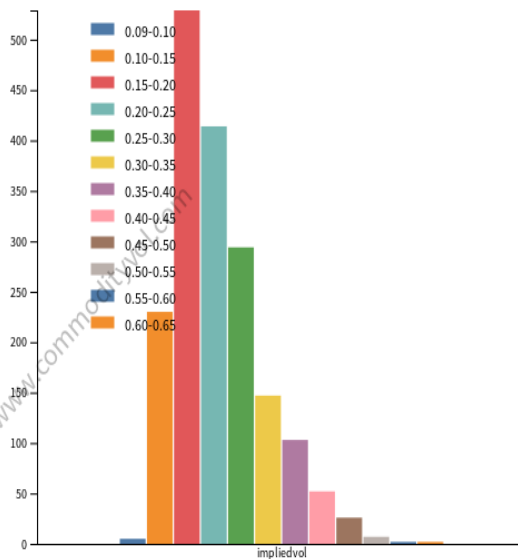
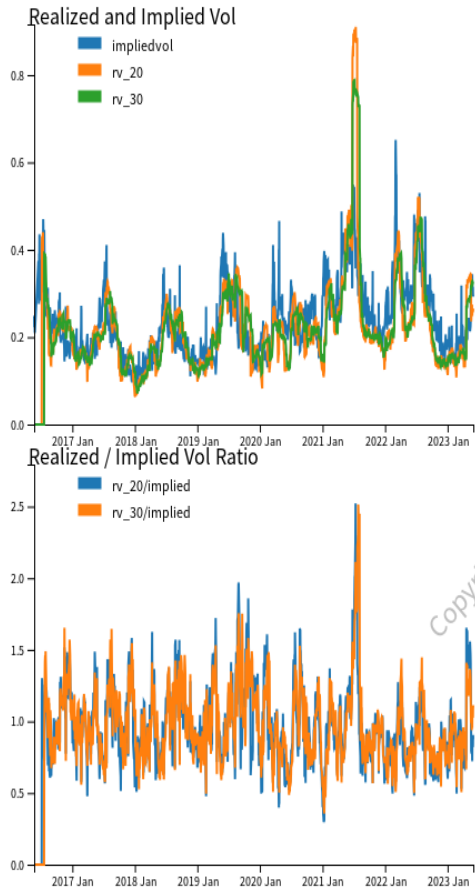
Soybean Options Front Month 50Δ



	mean	median	min	max	stddev
IMPLIEDVOL	0.188	0.177	0.087	0.508	0.055
dailyreturn	0.000	0.000	-0.086	0.065	0.013
sqrt(dr*dr*252)	0.143	0.106	0.000	1.358	0.141
vol_ma_20	0.186	0.176	0.000	0.345	0.051
vol_ma_30	0.185	0.176	0.000	0.327	0.051
rv_20	0.183	0.170	0.000	0.557	0.077
rv_30	0.183	0.172	0.000	0.479	0.074

Corn is also exhibiting an explosive move. The action was in ags this month!

Corn Options Front Month 50Δ



	mean	median	min	max	stddev
impliedvol	0.234	0.218	0.093	0.652	0.083
dailyreturn	0.000	0.000	-0.209	0.069	0.016
sqrt(dr*dr*252)	0.169	0.123	0.000	3.312	0.180
vol_ma_20	0.231	0.217	0.000	0.454	0.079
vol_ma_30	0.229	0.217	0.000	0.435	0.078
rv_20	0.219	0.204	0.000	0.910	0.108
rv_30	0.220	0.204	0.000	0.788	0.104

Energy

Energy is its usual normal self. Crude and its derivatives were down 3 to 8%, with WTI at the high end. With the exception of the Heating Oil contract, vol snapped upwards. Again, WTI Crude showing the biggest spike in vol. Natural gas, on the other hand, was unusually calm and stable. We'll see how long this lasts.

[Energy ATM](#)

[WTI Crude Detail](#)

[Brent Crude Detail](#)

[US Natty Gas Detail](#)

[Details Energy](#)

Equity Index

The ES (E-Mini SP500) was up a bit less than one percent this month. Vol was up 0.6 vol points at the money. VIX was down 1.38 points which corresponds to nearly 8.6%. The Nasdaq100 futures rocketed higher by 8%, with the Russell Futures flat. Vol was uniformly up from 1.6 to 2 vol points across the NQ, RUT and DJIA complex.

[EquityIndex ATM](#)

[SP500 Detail](#)

[VIX Detail](#)

Interest Rates

Futures were down across the board. Vol was up, but the small base causes the percentage changes to be exaggerated. This is also probably the last time we include Eurodollar future. The venerable product has reached the end of its life.

[Interest Rates ATM](#)

[30 Year Bond Detail](#)

[10 Year Note Detail](#)

[SOFR](#)

Foreign Exchange

With the notable exception of Ethereum futures, the currency futures were a mixed bag, the minor currencies rallied against the dollar, while the major fell. Vol, on the other hand, was destroyed.

[Foreign Exchange ATM](#)

[Yen Detail](#)

[Euro Detail](#)

[Bitcoin Detail](#)

[Ethereum Detail](#)

Metals

There is no joy in the metal complex. Whether it is recession risk or the risk of a tightening monetary policy, there was a strong sell off in metals. In terms of vol, it was a mixed bag. Copper vol rose, while most of the others declined.

[Metals ATM](#)

[Gold Detail](#)

[Silver Detail](#)

[Copper Detail](#)

Agriculture

Agriculture was where the action was out of control. There were moves of 13% in oats and feeder cattle. The soybean complex was down about 10%. There was a divergence between the Wheat product and Kansas City Wheat. Corn vol rocketed up. Bean, bean meal and bean oil vol exploded. Hog vol also exploded.

[Ags ATM](#)

[Wheat Detail](#)

[Oats Detail](#)

[Corn Detail](#)

[Lean Hog](#)

[Live Cattle Detail](#)

[Ags Details](#)

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At The Money Roundup of Products

EquityIndex

exch/prod	desc	futures chng [%]	vol chng [%]
CBT/YM	E-Mini Dow	-1173.000 [-3.4%]	+0.003 [+2.0%]
CME/NQ	E-Mini Nasdaq	+993.750 [+7.5%]	+0.014 [+7.2%]
CME/RTO	E-Mini Russell 2000	-24.600 [-1.4%]	+0.028 [+14.4%]
CME/RTM	E-Mini Russell EOM	-8.200 [-0.5%]	+0.023 [+12.7%]
CME/ES	E-Mini S&P 500	+4.750 [+0.1%]	+0.003 [+2.4%]
CBOE/VIX	VIX Volatility Index	+1.860 [+11.6%]	+0.087 [+12.6%]

Metals

exch/prod	desc	futures chng [%]	vol chng [%]
COMEX/HX	Copper	-0.297 [-7.5%]	+0.014 [+5.6%]
COMEX/OG	Gold	-10.100 [-0.5%]	-0.011 [-7.4%]
NYMEX/PAO	Palladium	-87.800 [-6.1%]	+0.007 [+1.6%]
NYMEX/PO	Platinum	-65.700 [-6.2%]	-0.017 [-5.7%]
COMEX/SO	Silver	-1.643 [-6.5%]	-0.014 [-5.0%]

Energy

exch/prod	desc	futures chng [%]	vol chng [%]
NYMEX/BZO	Brent Crude Oil Margin	-6.710 [-8.5%]	+0.052 [+14.7%]
NYMEX/BE	Brent Euro Style	-6.340 [-8.0%]	+0.126 [+39.6%]
NYMEX/CVR	Chicago Ethanol(platts) Average Price	+0.055 [+2.3%]	+0.011 [+7.6%]
NYMEX/LO	Crude Oil	-7.570 [-10.0%]	+0.067 [+18.0%]
NYMEX/LN	European Natural Gas	-0.052 [-2.2%]	+0.018 [+2.6%]
NYMEX/E7	Henry Hub Financial Last Day	-0.052 [-2.2%]	+0.015 [+2.2%]
NYMEX/ON	Natural Gas	-0.052 [-2.2%]	+0.017 [+2.6%]
NYMEX/OH	NY Harbor ULSD	-0.131 [-5.5%]	-0.020 [-5.6%]
NYMEX/OB	RBOB	-0.107 [-4.2%]	+0.013 [+4.0%]

InterestRates

exch/prod	desc	futures chng [%]	vol chng [%]
CBT/26	2 YR US Treasury Note	-0.027 [-0.0%]	+0.001 [+4.4%]
CBT/25	5 YR US Treasury Note	-0.250 [-0.2%]	+0.007 [+11.6%]
CBT/21	10 YR US Treasury Note	-0.031 [-0.0%]	+0.007 [+9.5%]
CBT/17	30 YR US Treasury Bond	-1.313 [-1.0%]	-0.006 [-4.4%]
CME/ED	Eurodollar	-0.122 [-0.1%]	-0.002 [-18.3%]
CBT/UBE	Long Term US Treasury Bond	-1.469 [-1.1%]	+0.003 [+2.0%]
CME/S0	One-year Mid-curve Three-month SOFR	-0.305 [-0.3%]	+0.002 [+6.3%]
CME/SR3	Three-month SOFR	-0.155 [-0.2%]	-0.001 [-11.5%]
CME/S3	Three-year Mid-curve Three-month SOFR	-0.055 [-0.1%]	+0.001 [+7.5%]
CME/S2	Two-year Mid-curve Three-month SOFR	-0.075 [-0.1%]	+0.000 [+1.9%]

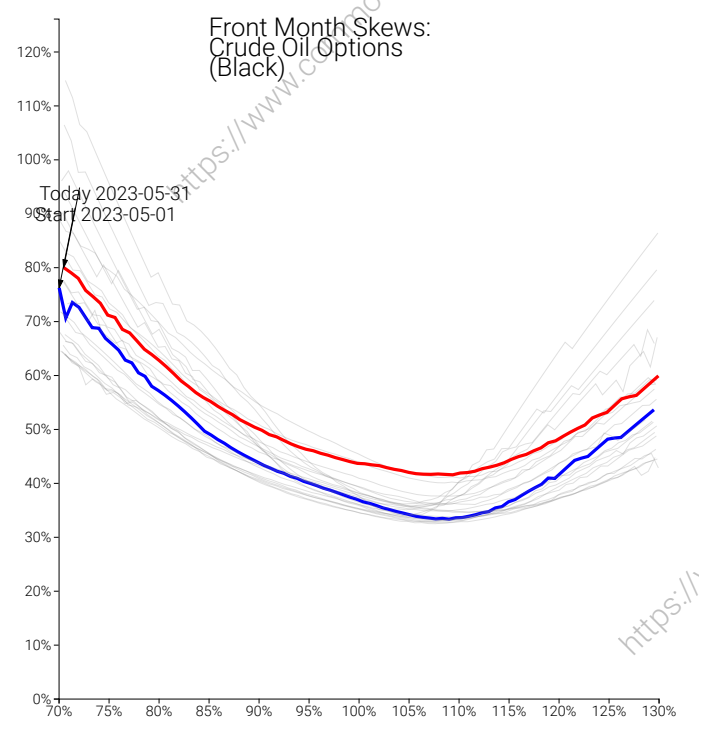
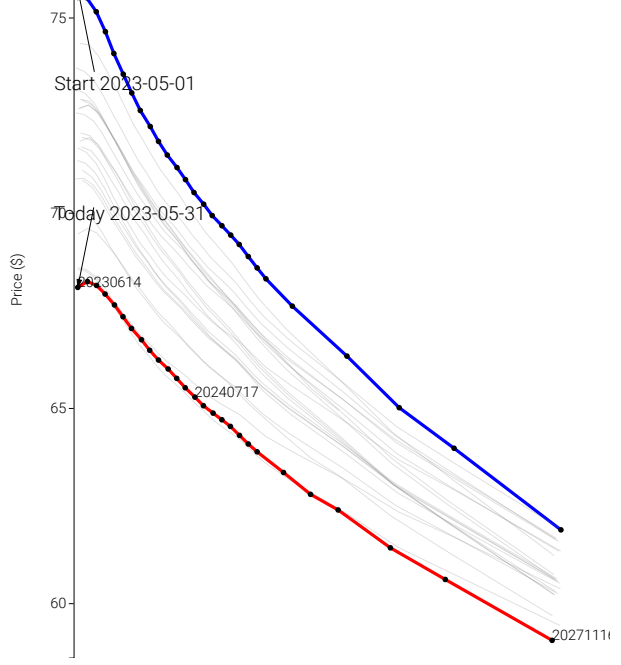
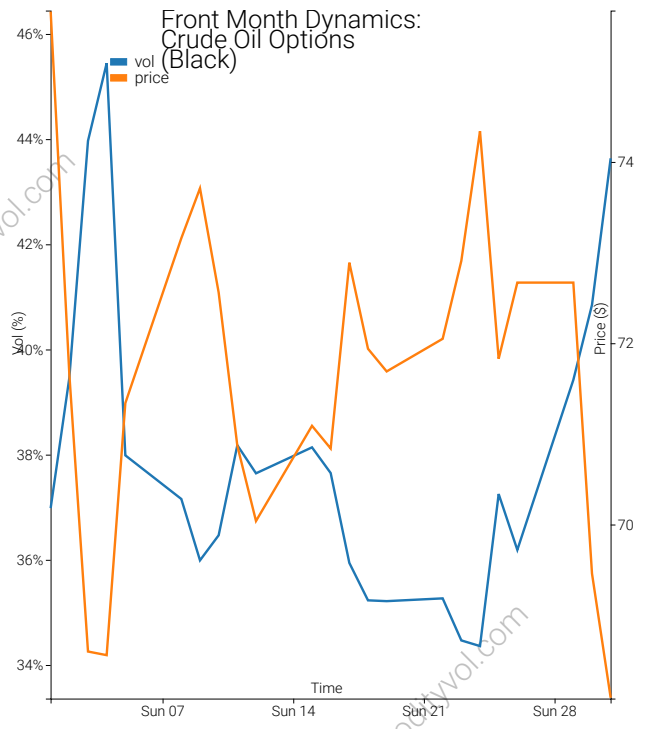
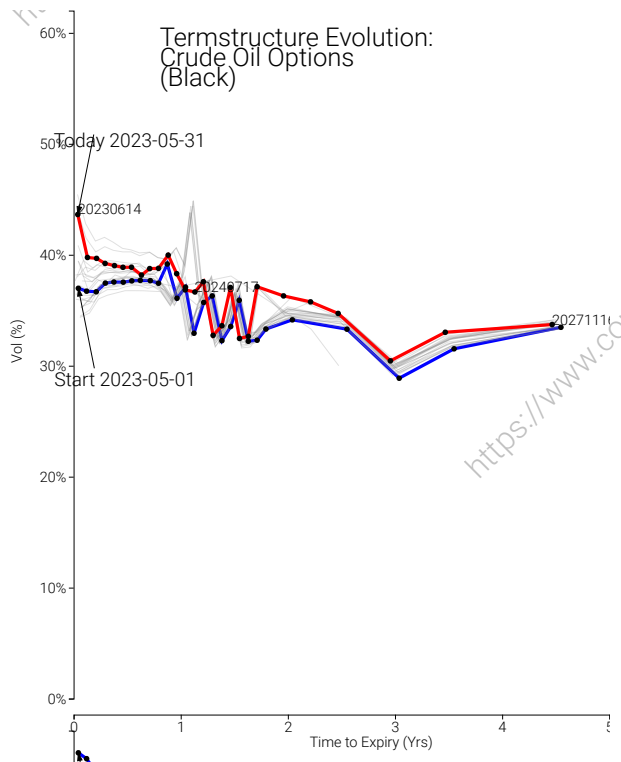
exch/prod	desc	futures chng [%]	vol chng [%]
CME/DK	Class IV Milk	+0.190 [+1.1%]	+0.031 [+41.0%]
CBT/C	Corn	+0.095 [+1.6%]	+0.069 [+30.2%]
CME/62	Feeder Cattle	+29.475 [+14.1%]	+0.000 [+0.3%]
CBT/KW	KC HRW Wheat	+0.333 [+4.4%]	+0.056 [+17.5%]
CME/LN	Lean Hog	+3.275 [+4.1%]	+0.037 [+24.5%]
CME/48	Live Cattle	+2.800 [+1.7%]	-0.012 [-10.8%]
CME/NF	Nonfat Dry Milk	+1.125 [+1.0%]	+0.006 [+8.7%]
CBT/O	Oats	+0.343 [+11.2%]	-0.002 [-0.5%]
CBT/14	Rough Rice	-0.325 [-1.8%]	+0.036 [+23.6%]
CBT/S	Soybean	-1.277 [-8.9%]	+0.069 [+44.8%]
CBT/06	Soybean Meal	-40.200 [-9.3%]	+0.020 [+10.1%]
CBT/07	Soybean Oil	-5.610 [-10.8%]	+0.139 [+49.8%]
CBT/W	Wheat	-0.240 [-3.9%]	+0.025 [+7.3%]

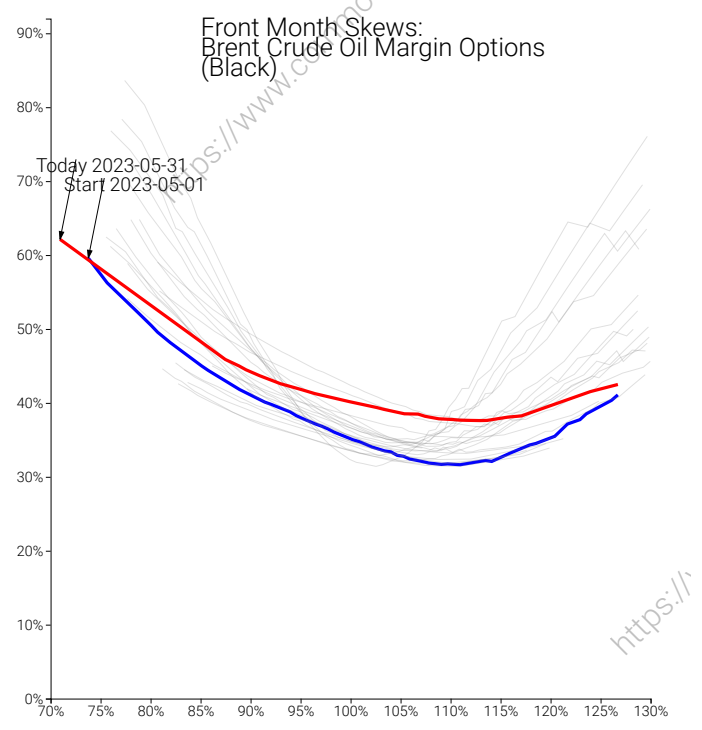
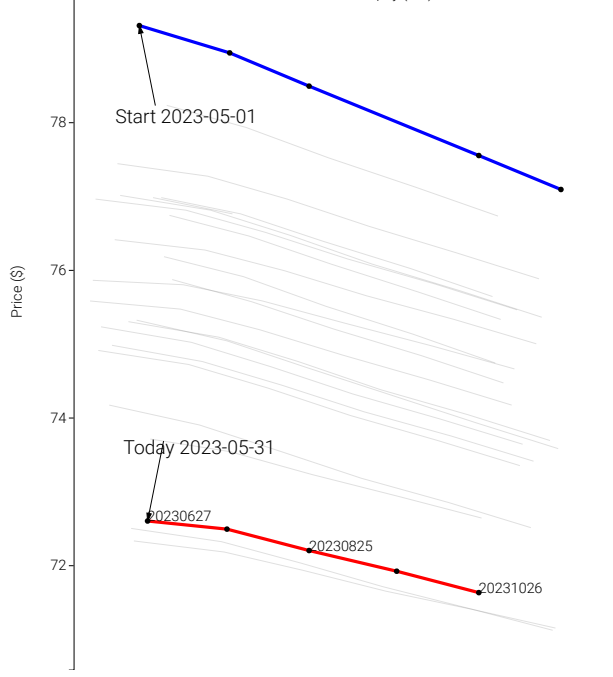
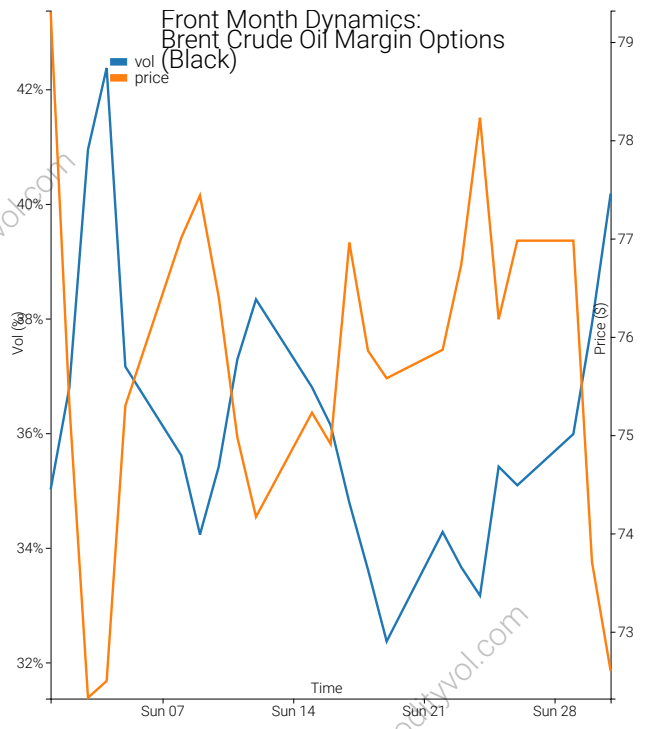
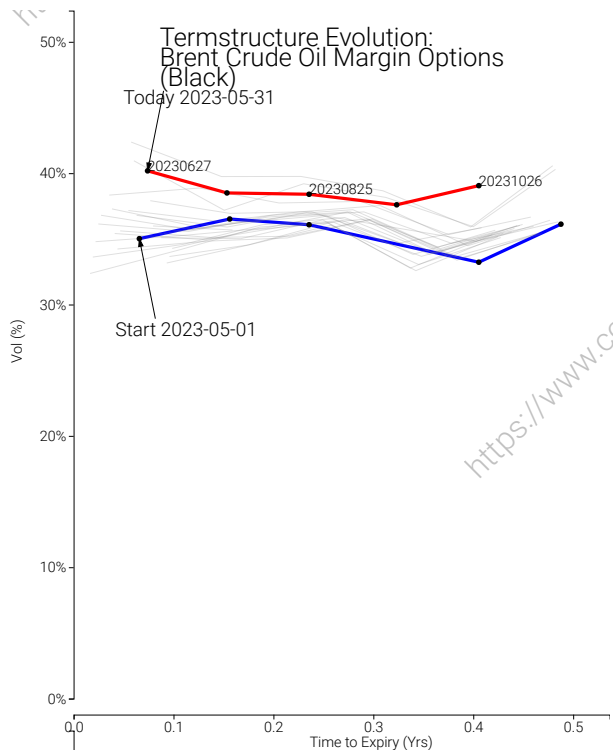
Forex

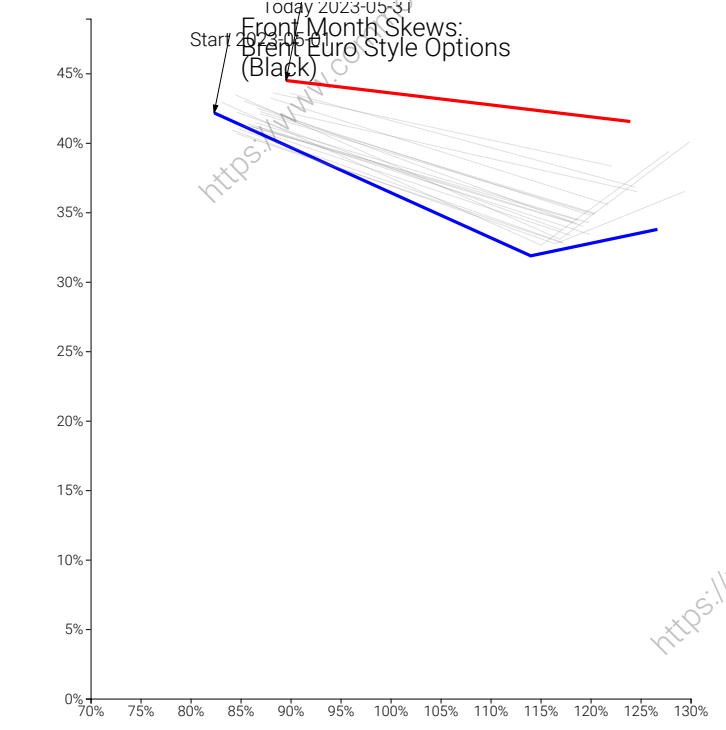
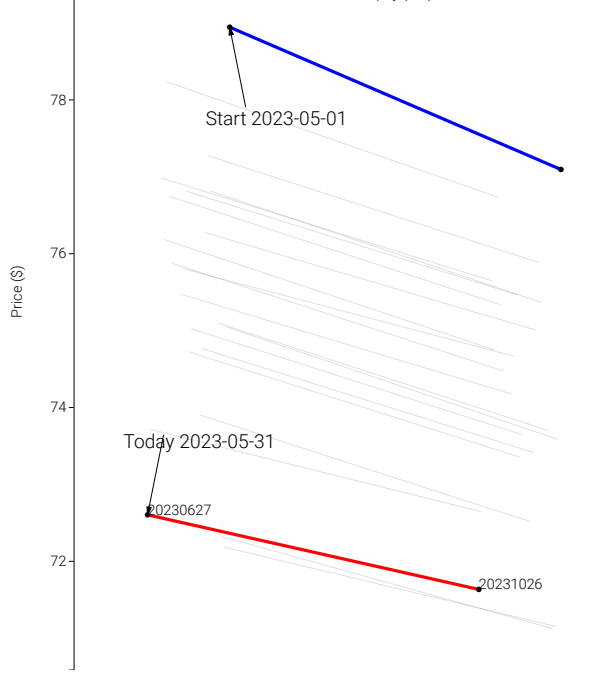
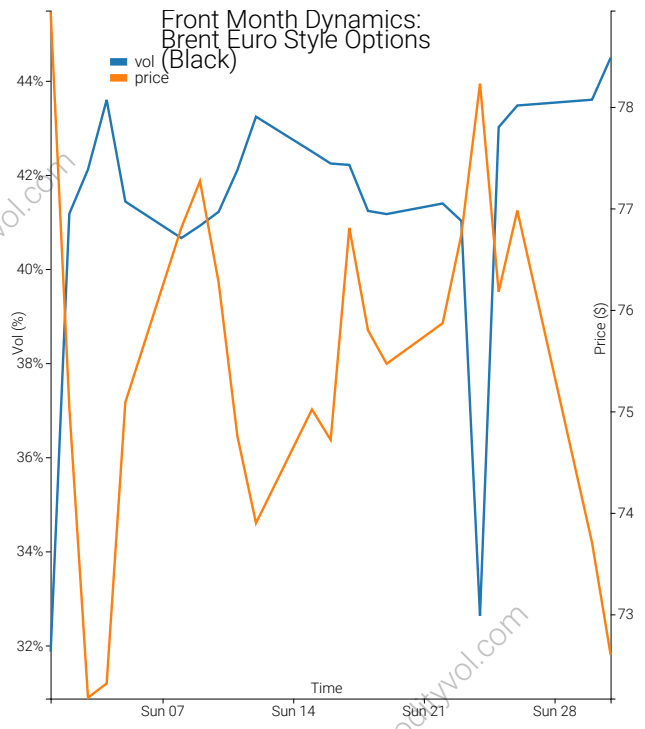
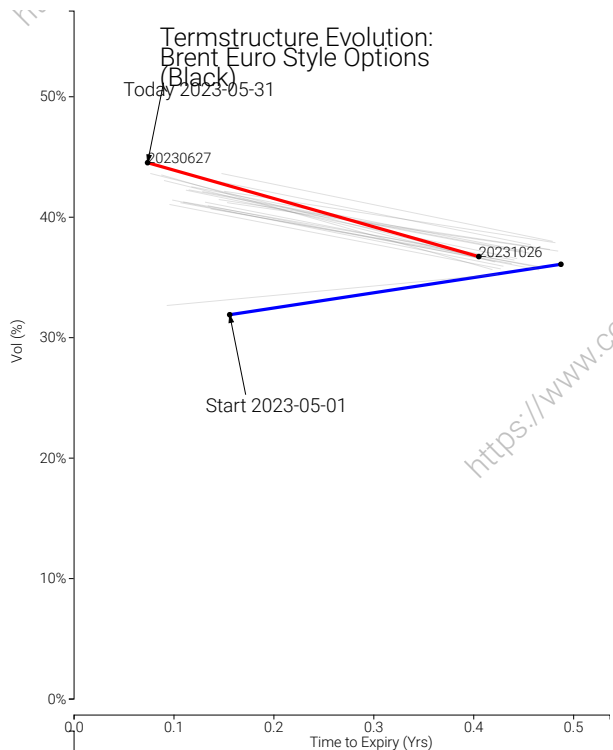
exch/prod	desc	futures chng [%]	vol chng [%]
CME/ADU	AUDUSD 2pmfix	-0.015 [-2.2%]	-0.028 [-20.2%]
CME/BTC	Bitcoin	-840.000 [-3.0%]	-0.087 [-18.5%]
CME/CAU	CADUSD 2pmfix	-0.002 [-0.3%]	-0.016 [-20.1%]
CME/CHU	CHFUSD 2pmfix	-0.022 [-2.0%]	-0.034 [-32.3%]
CME/ETH	Ethereum Futures	+51.000 [+2.8%]	-0.108 [-22.4%]
CME/EUU	EURUSD 2pmfix	-0.032 [-2.9%]	-0.042 [-38.3%]
CME/GBU	GBPUSD 2pmfix	-0.007 [-0.6%]	-0.026 [-24.8%]
CME/JPU	JPYUSD 2pmfix	-0.000 [-1.7%]	-0.037 [-29.1%]
CME/MP	Mexican Peso	+0.001 [+2.1%]	-0.013 [-10.9%]
CME/NE	New Zealand	-0.016 [-2.5%]	-0.006 [-5.8%]

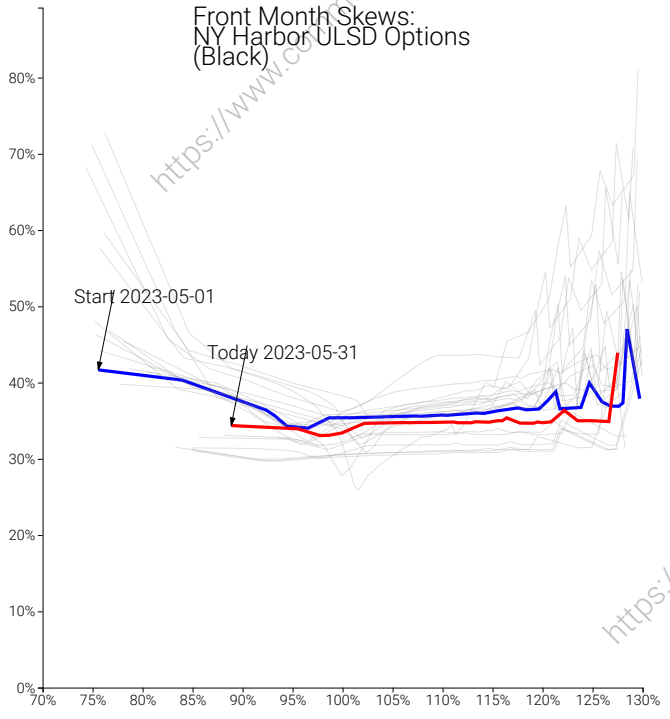
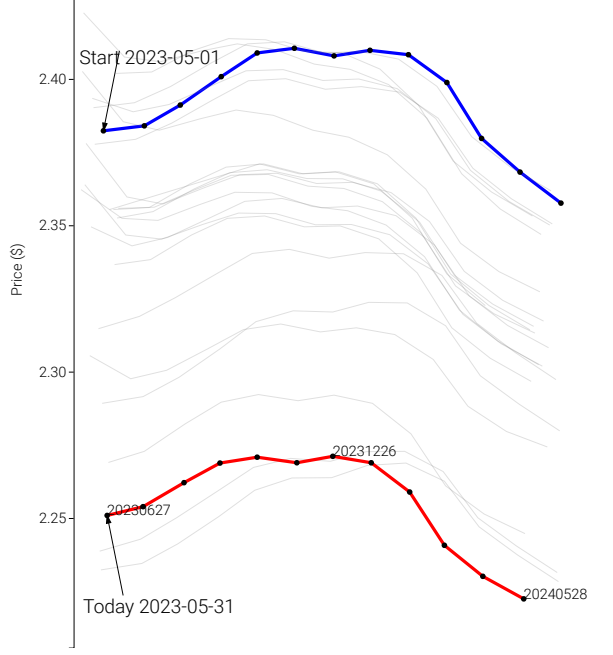
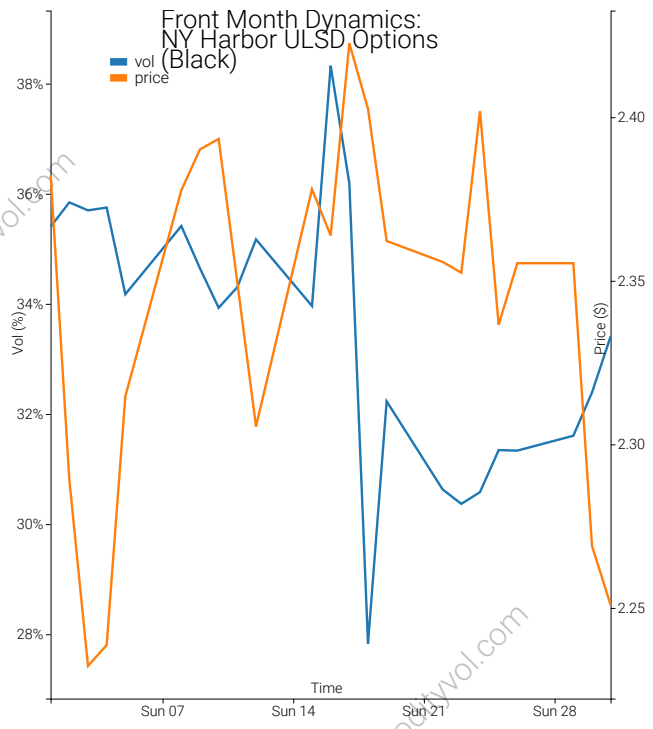
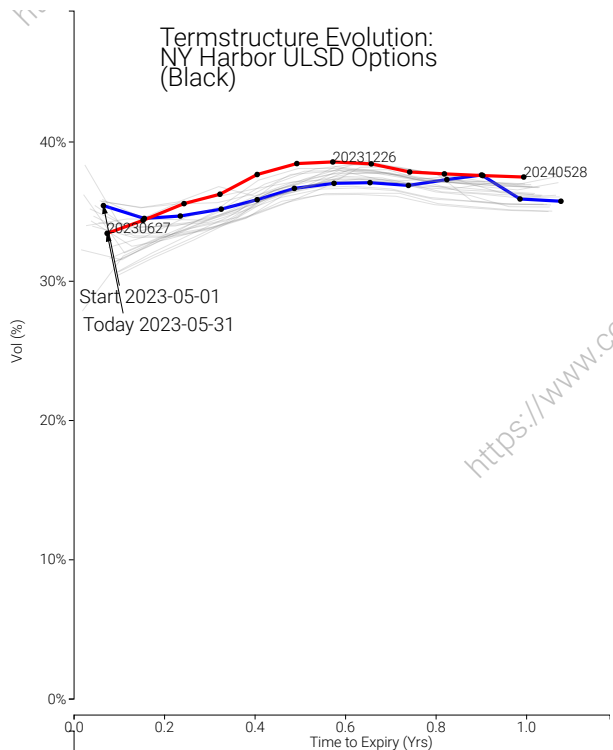
Skews, Termstructures and more

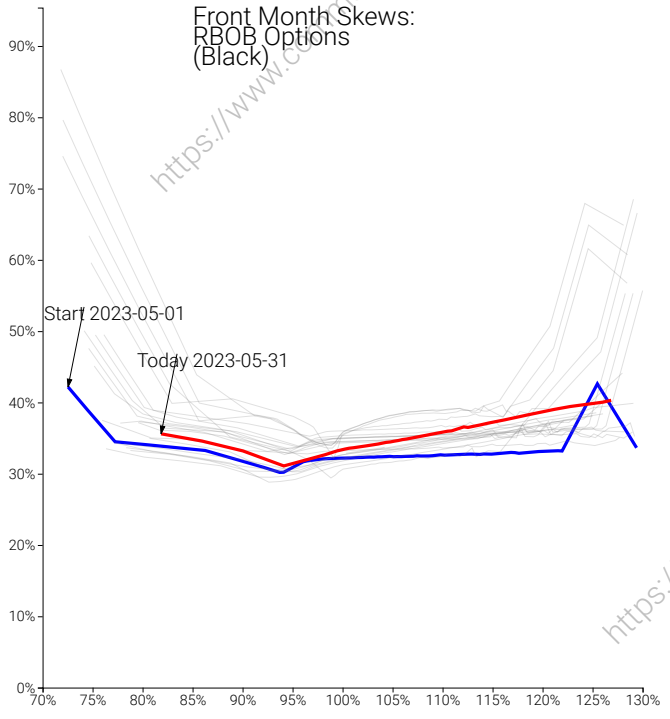
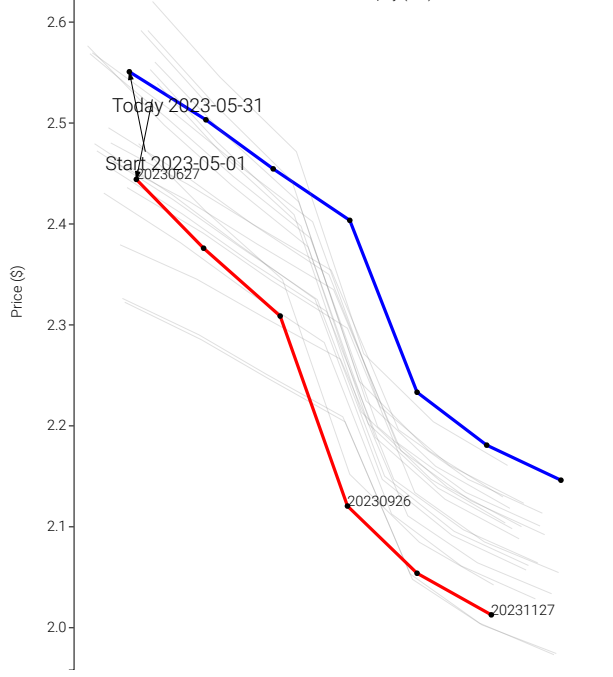
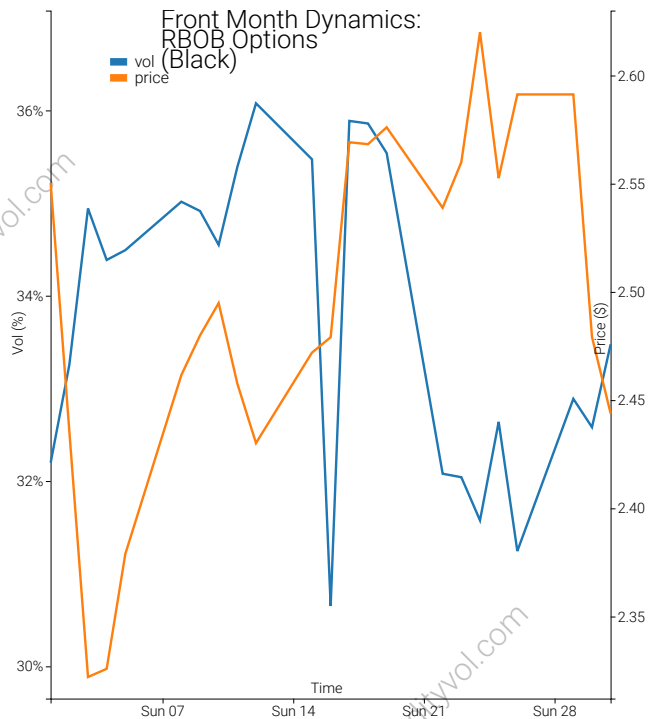
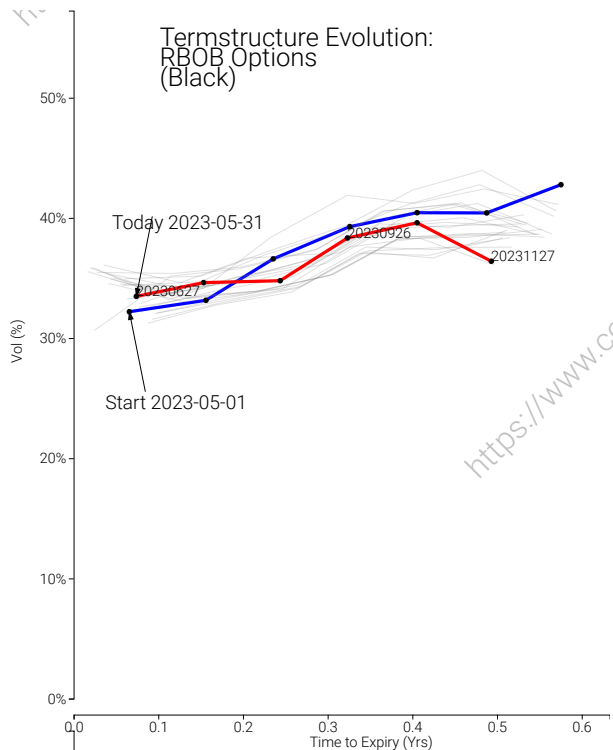
Energy: Crude and Derivatives

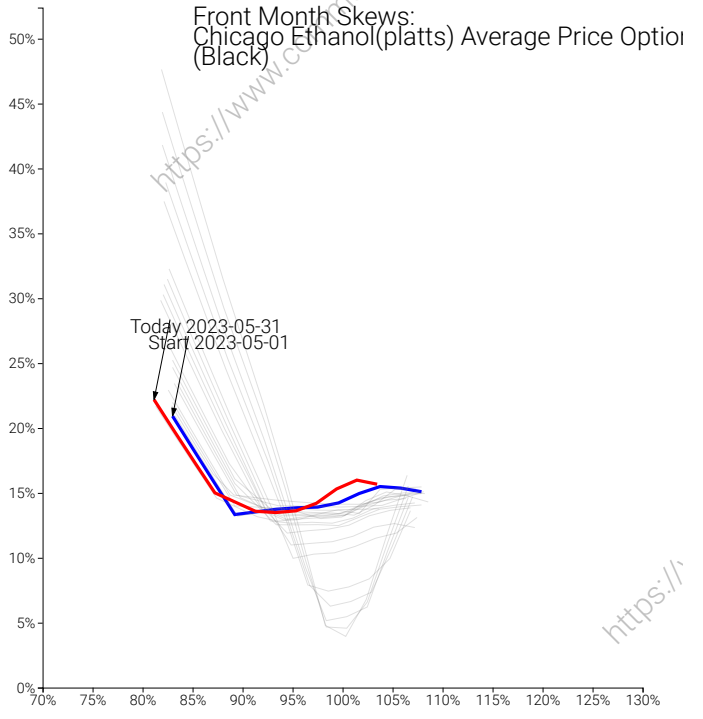
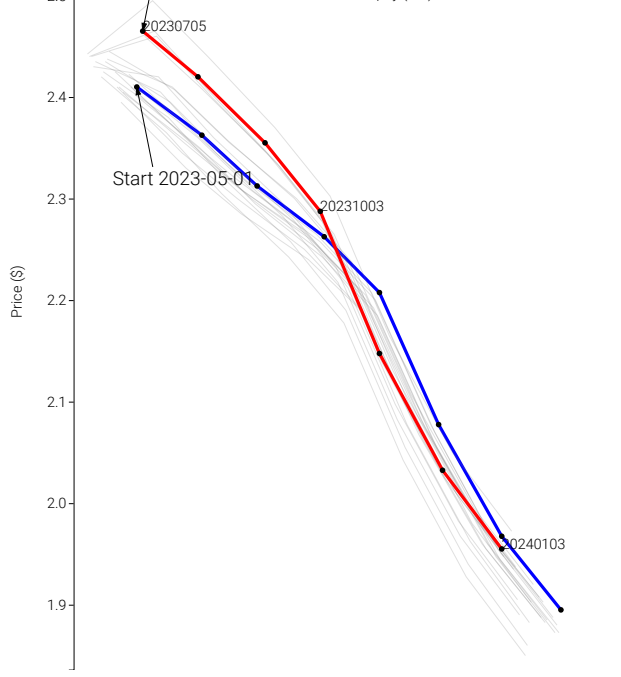
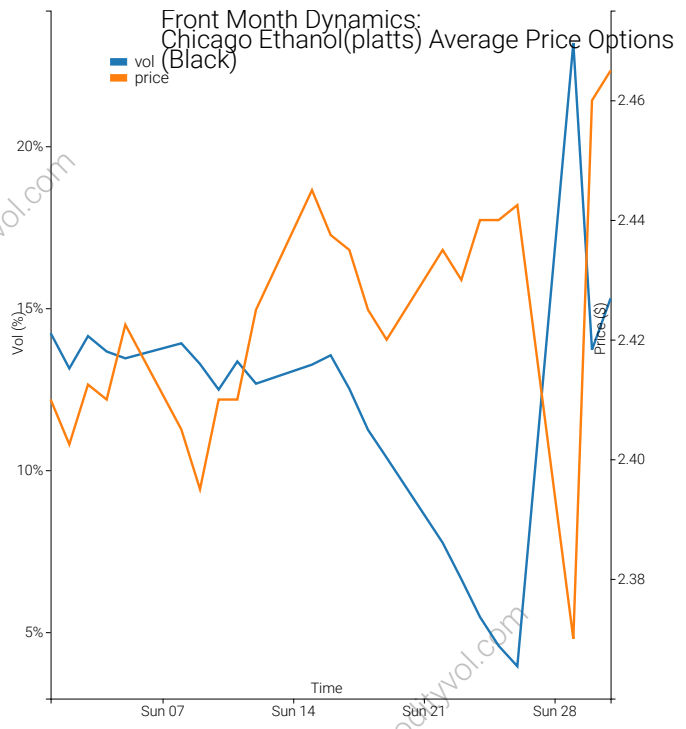
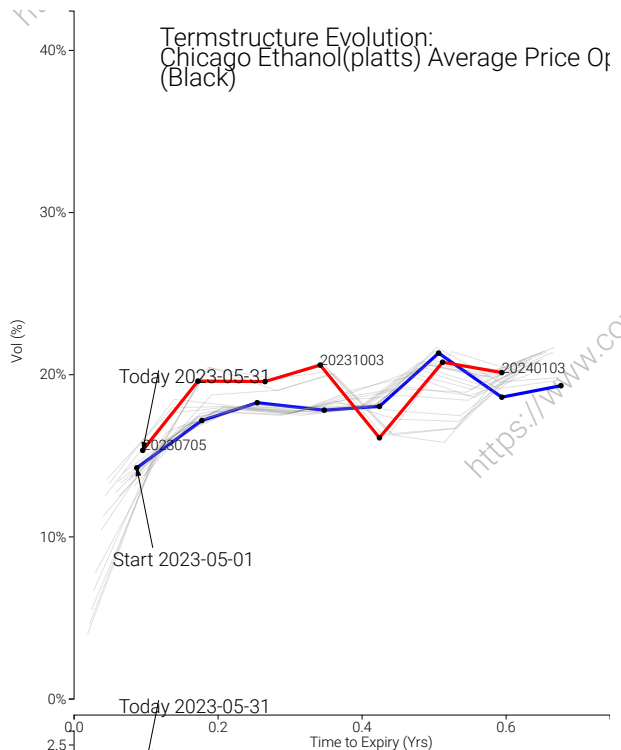




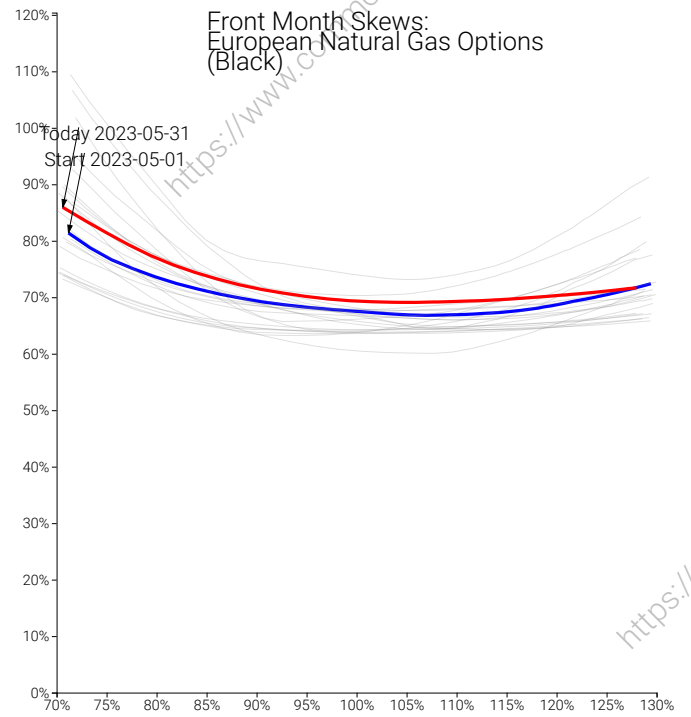
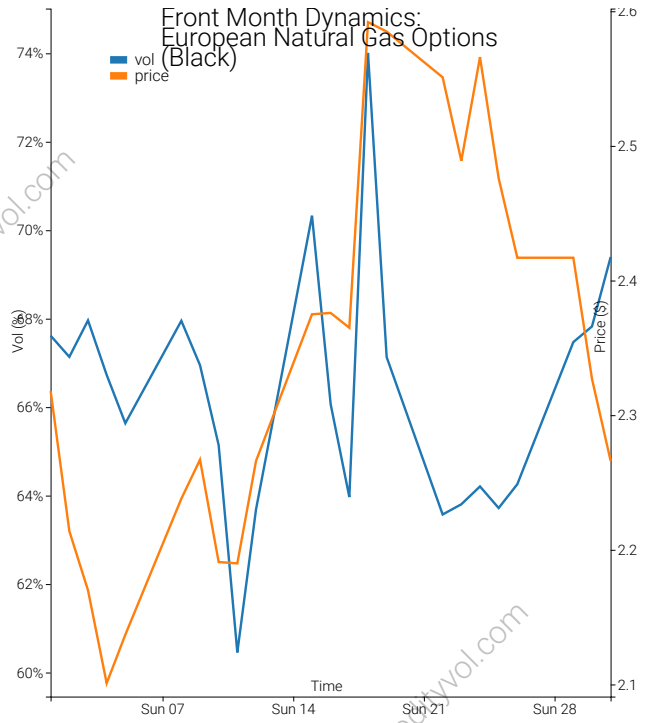
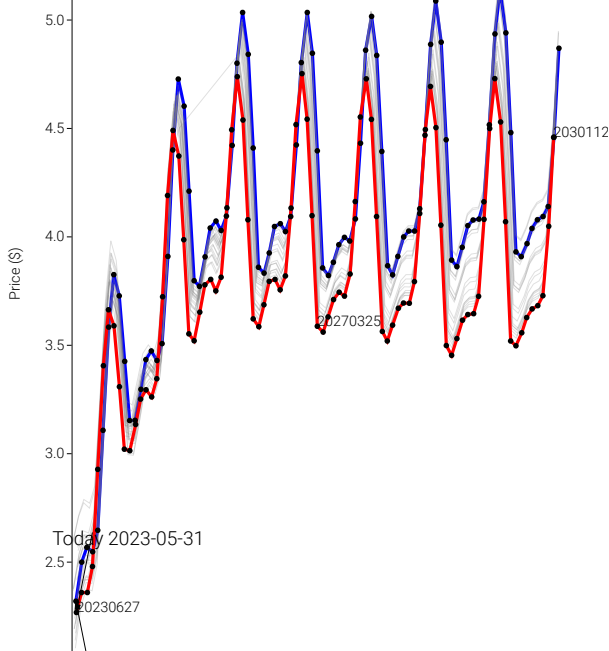
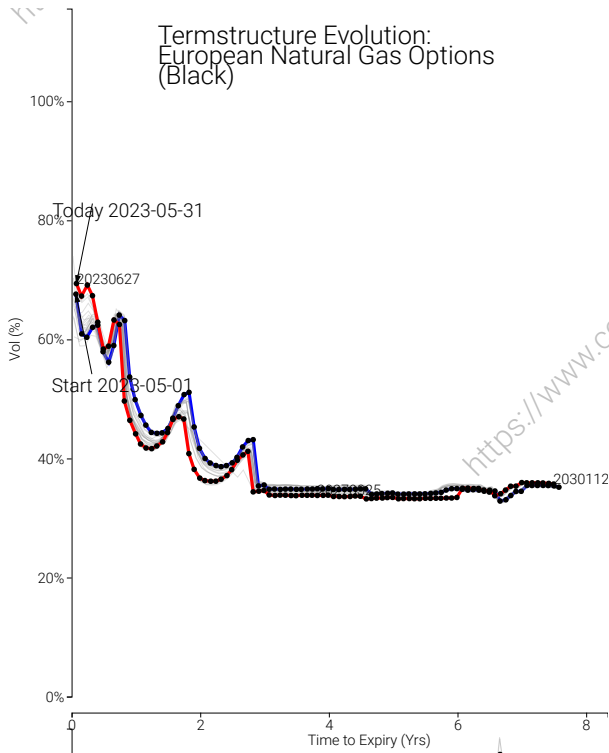


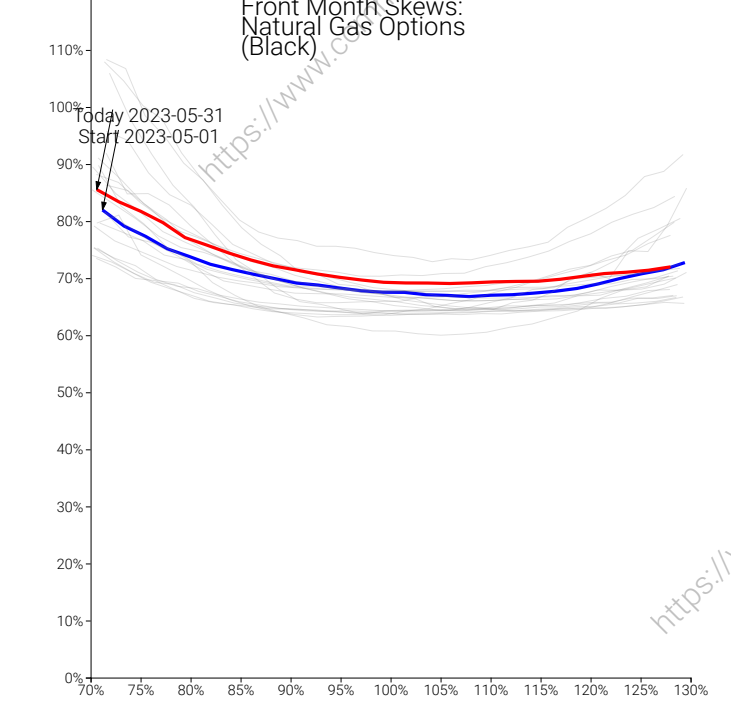
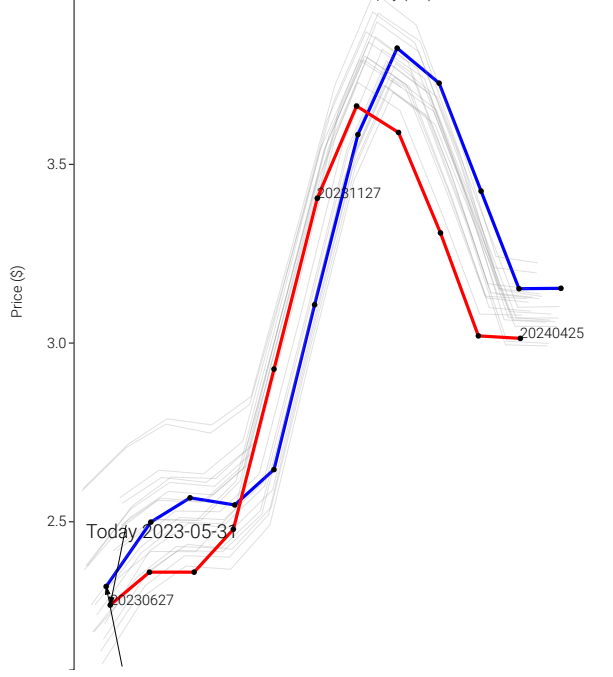
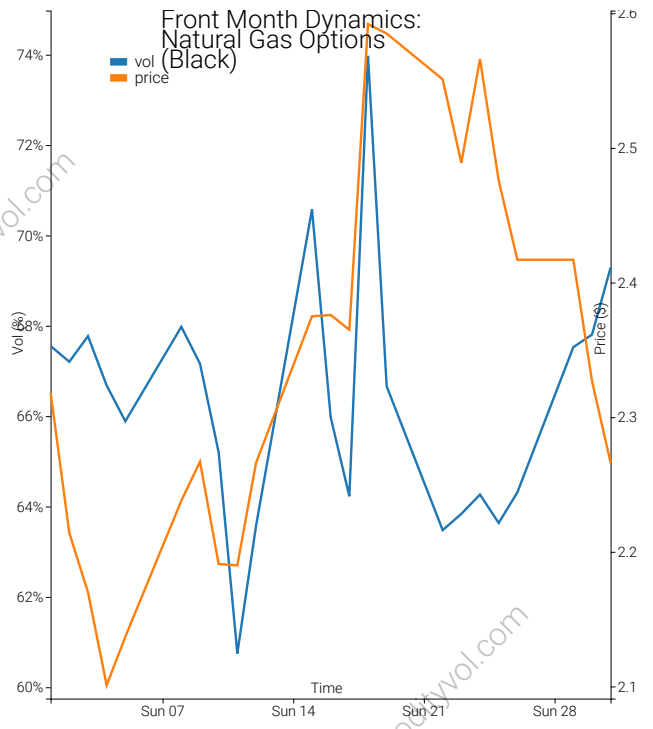
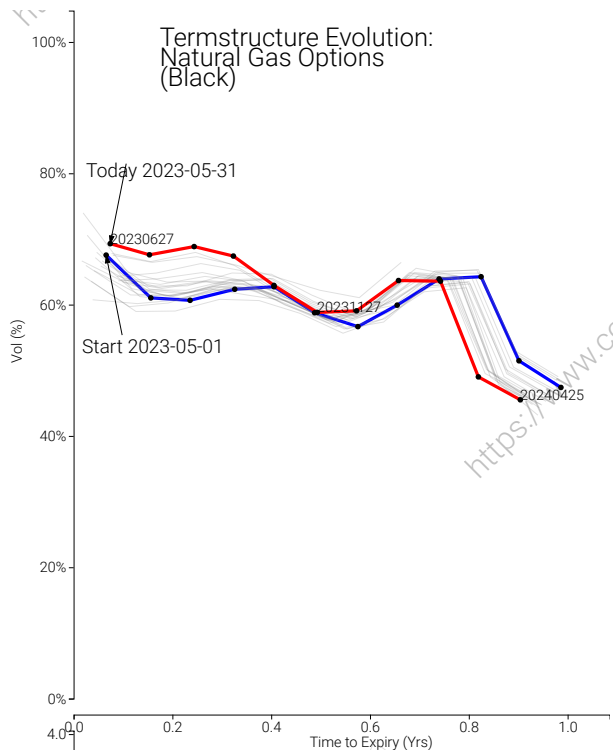


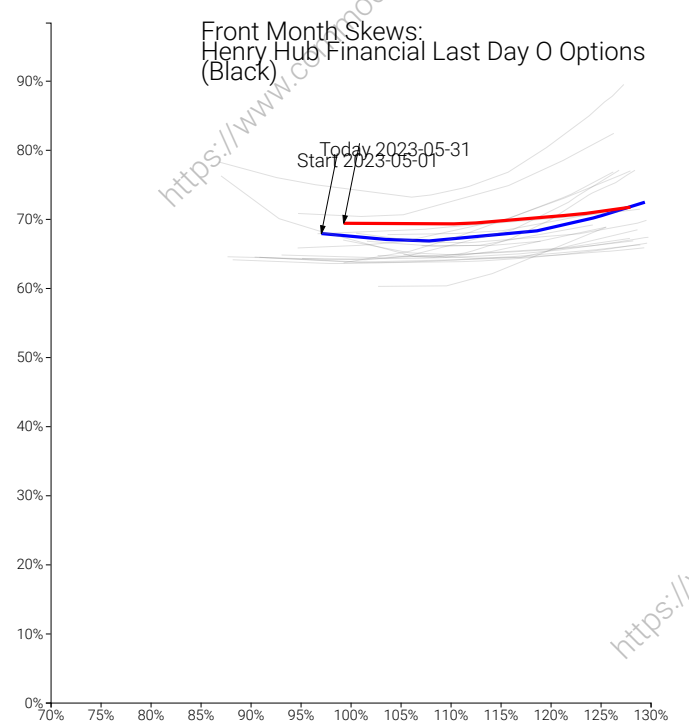
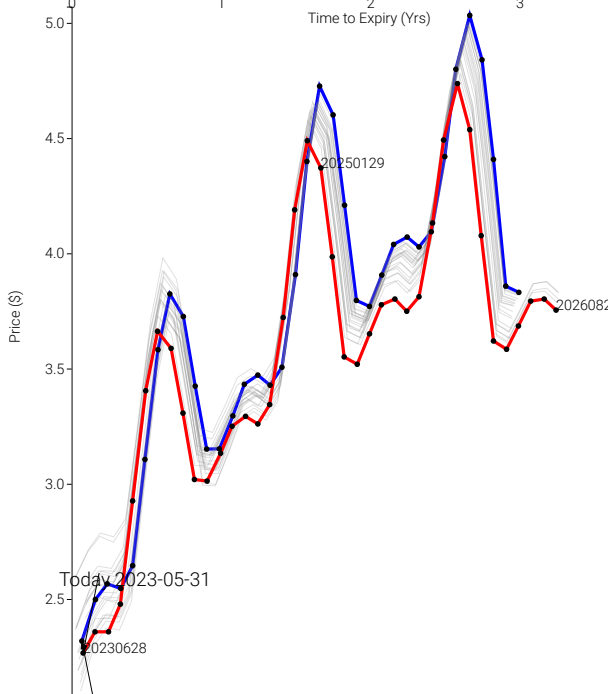
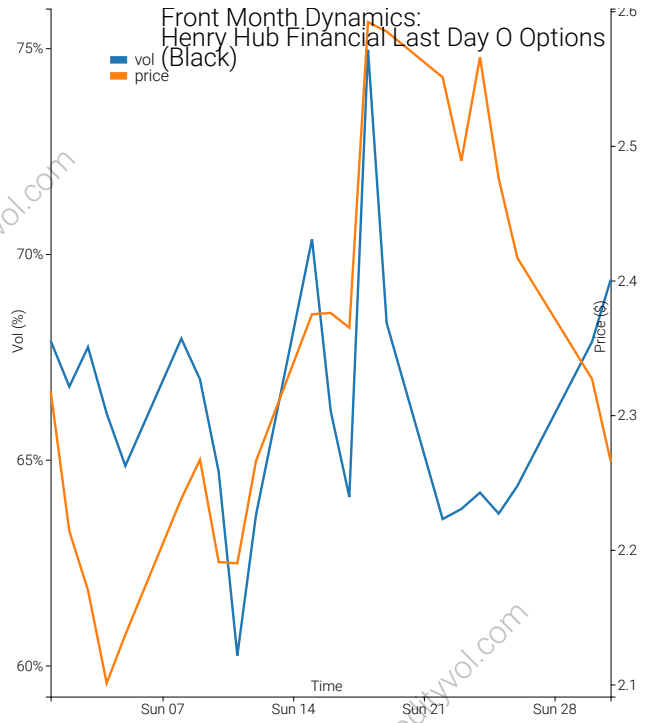
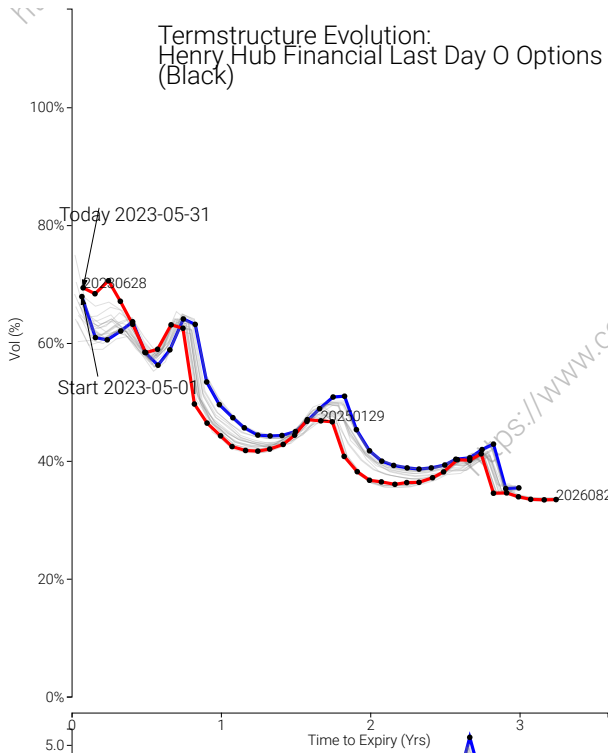




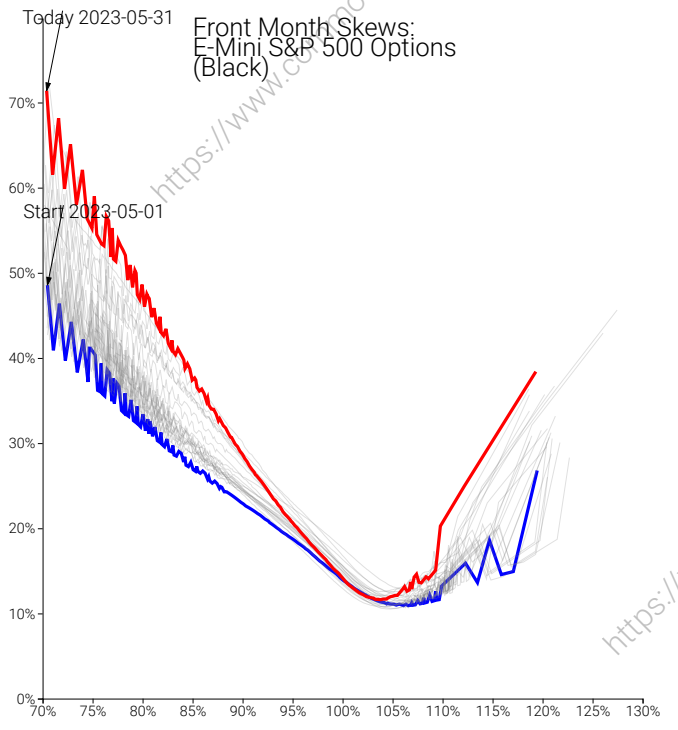
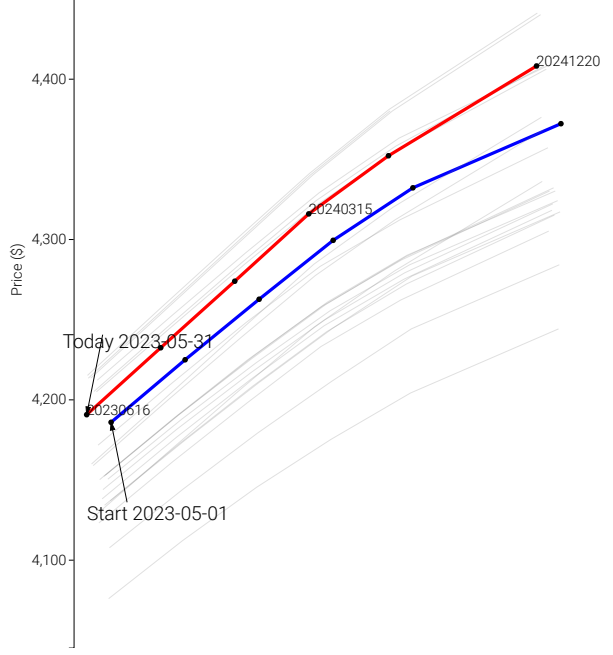
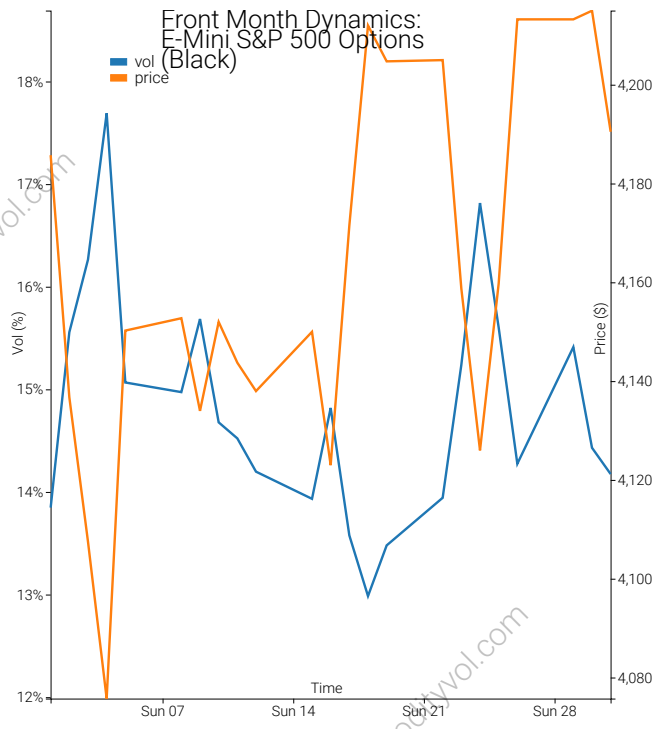
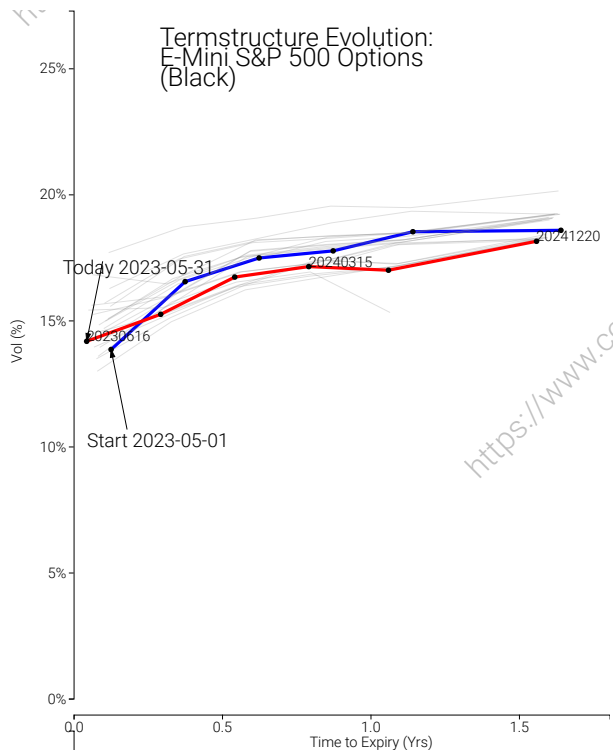
Energy: Natural Gas

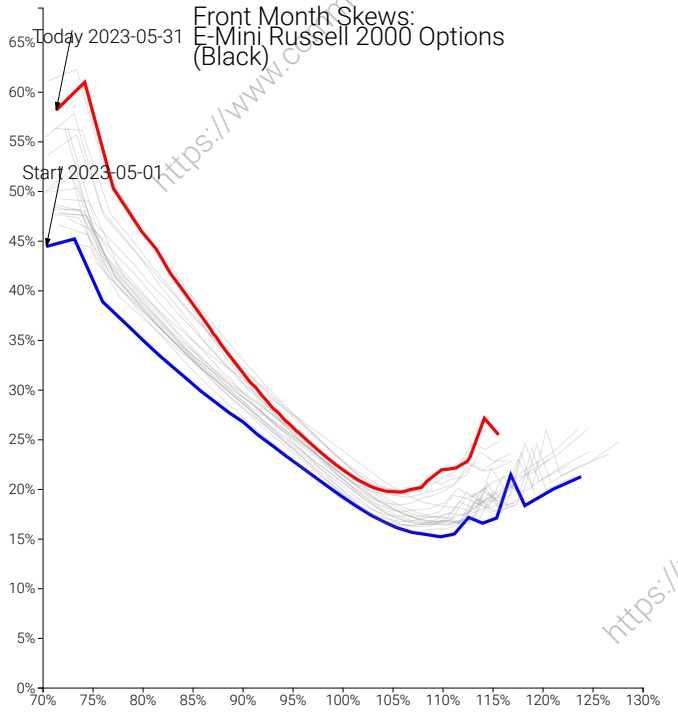
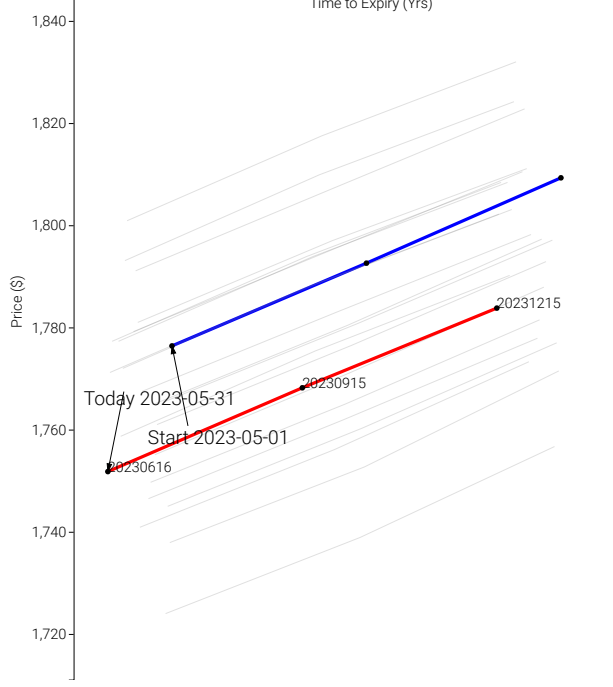
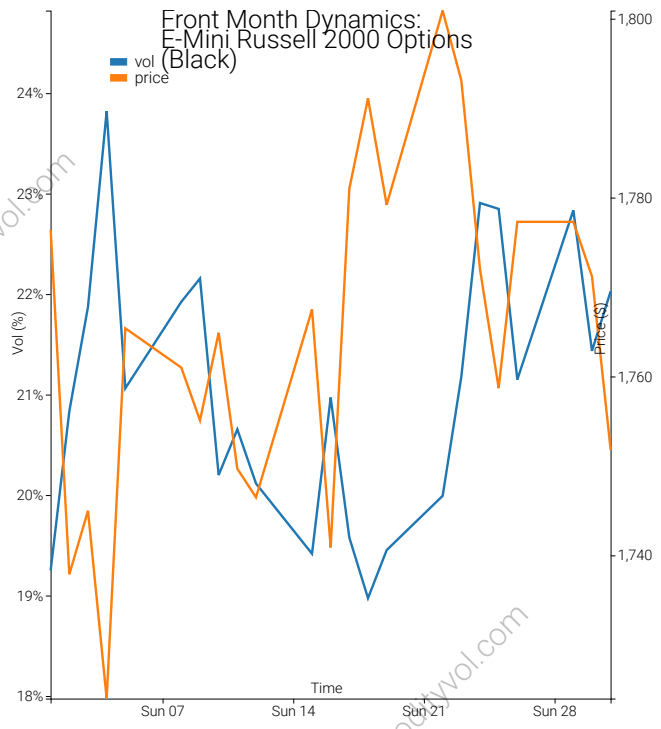
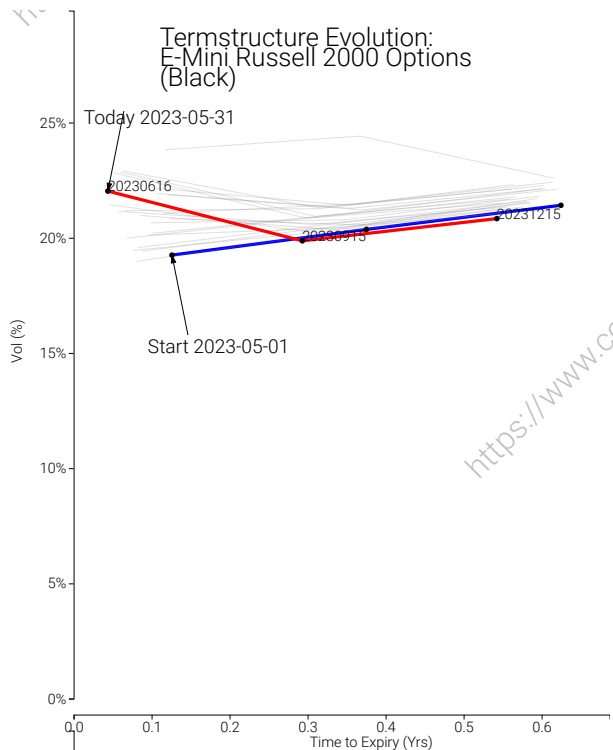


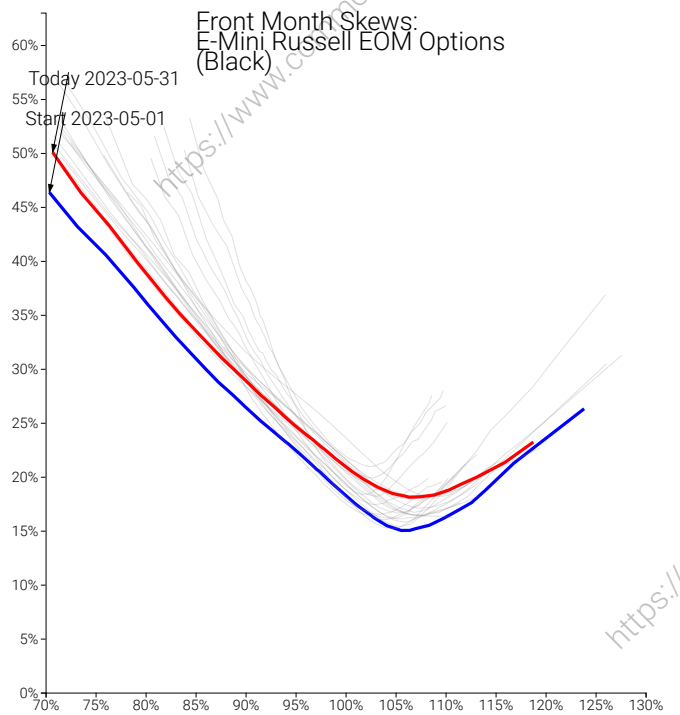
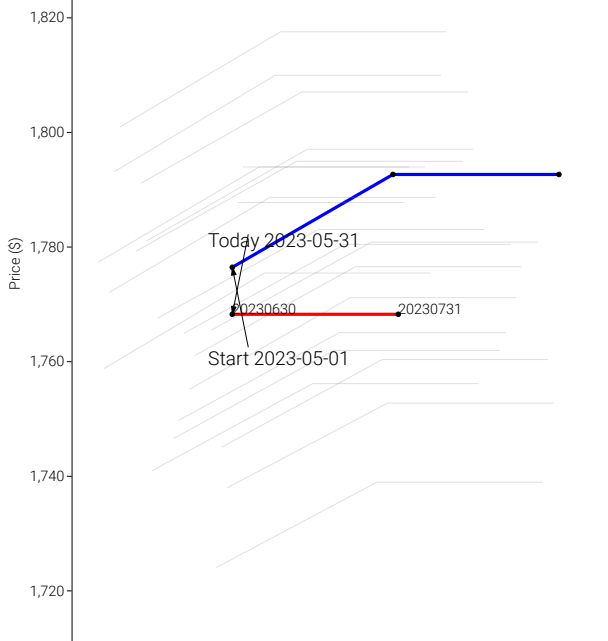
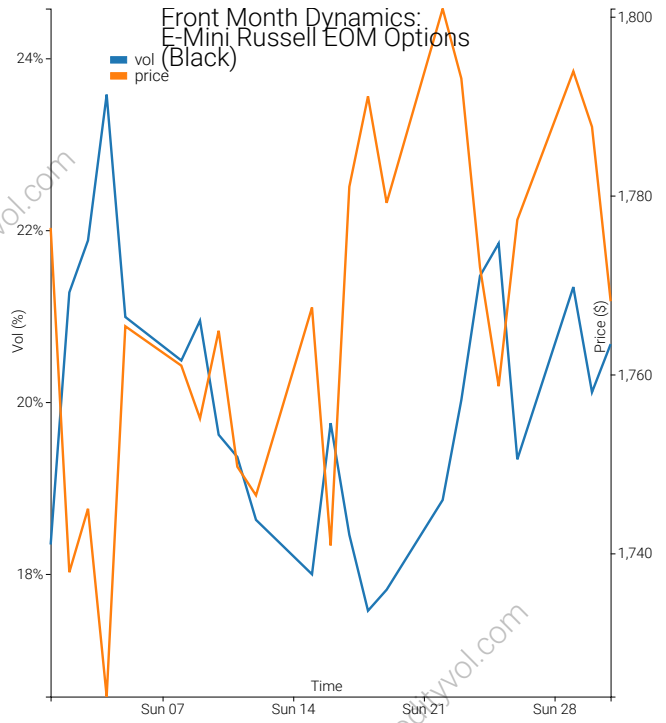
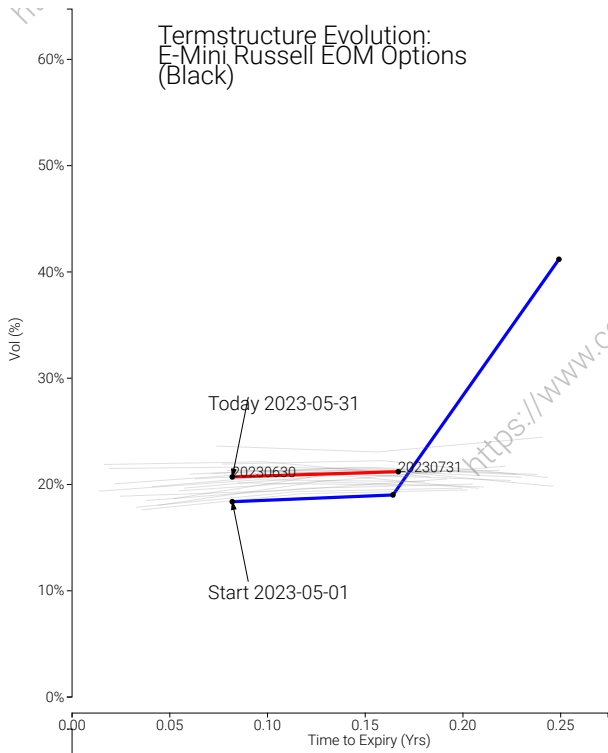


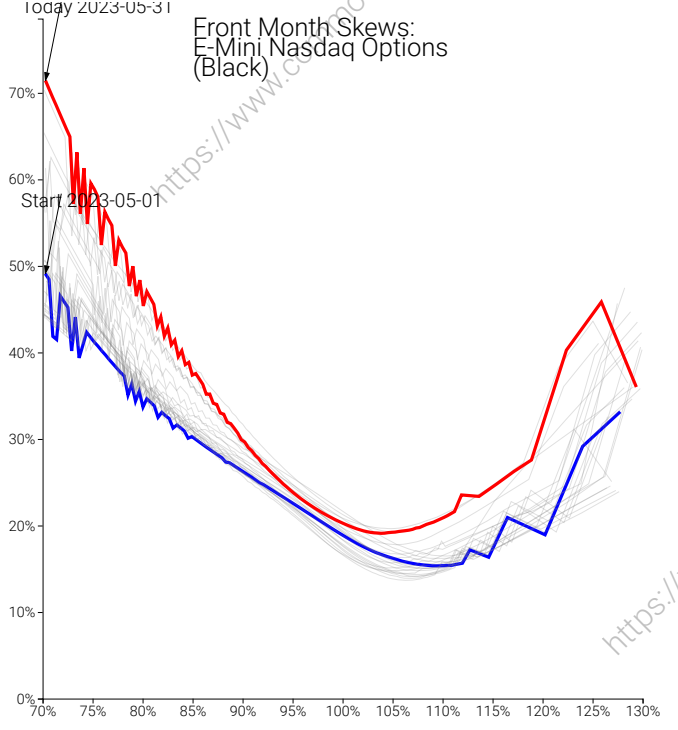
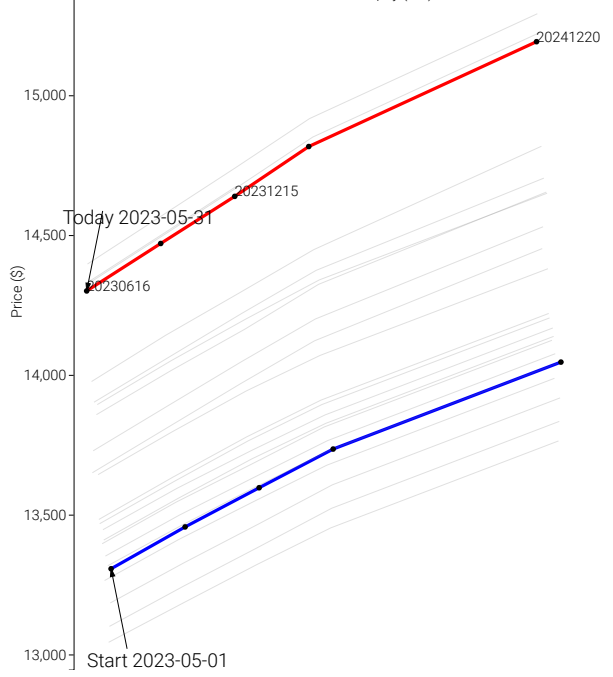
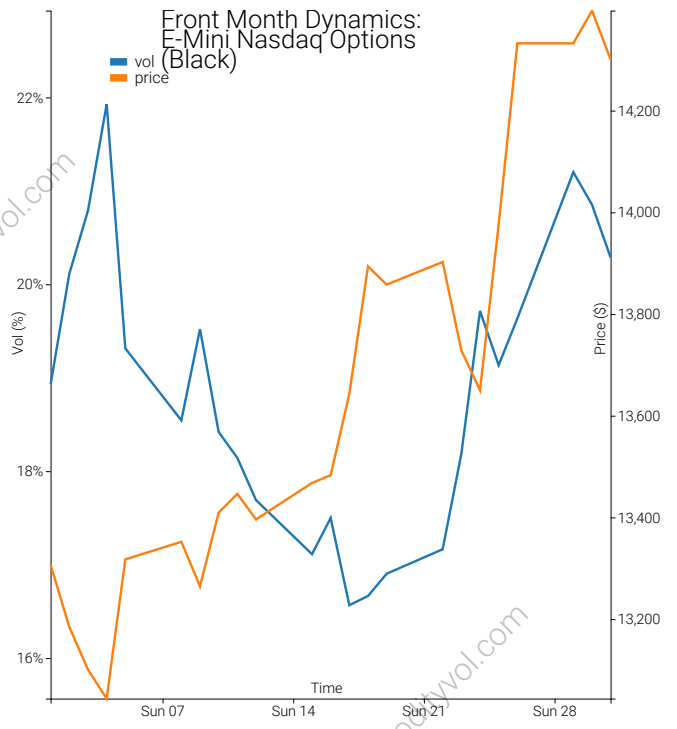
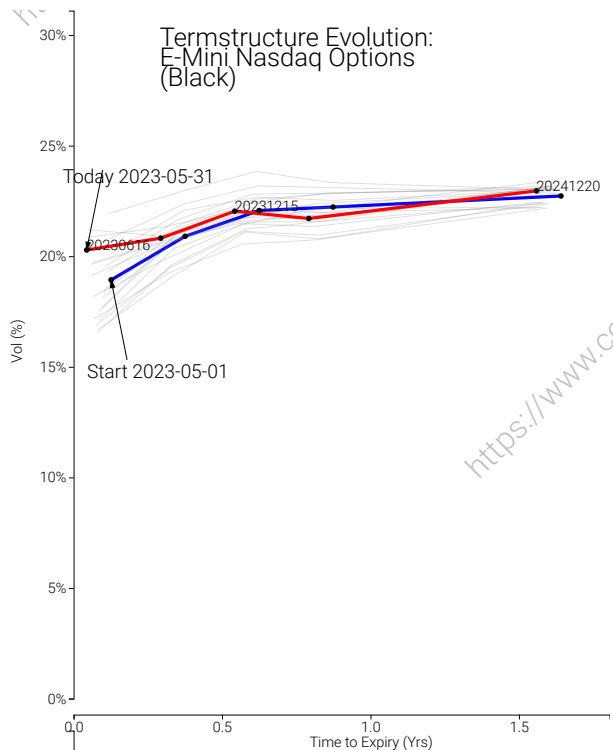


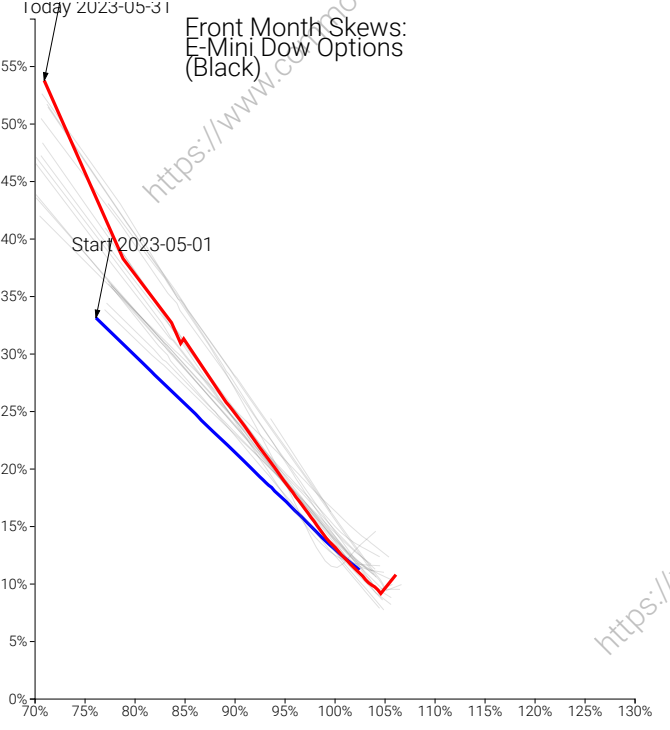
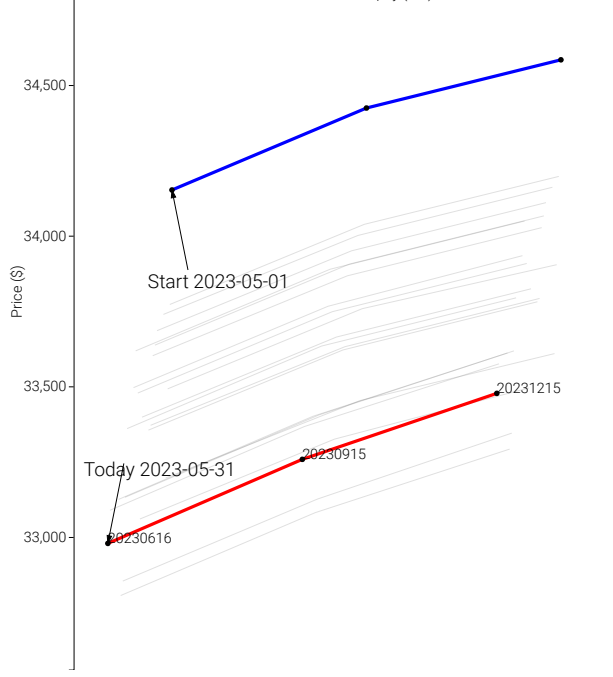
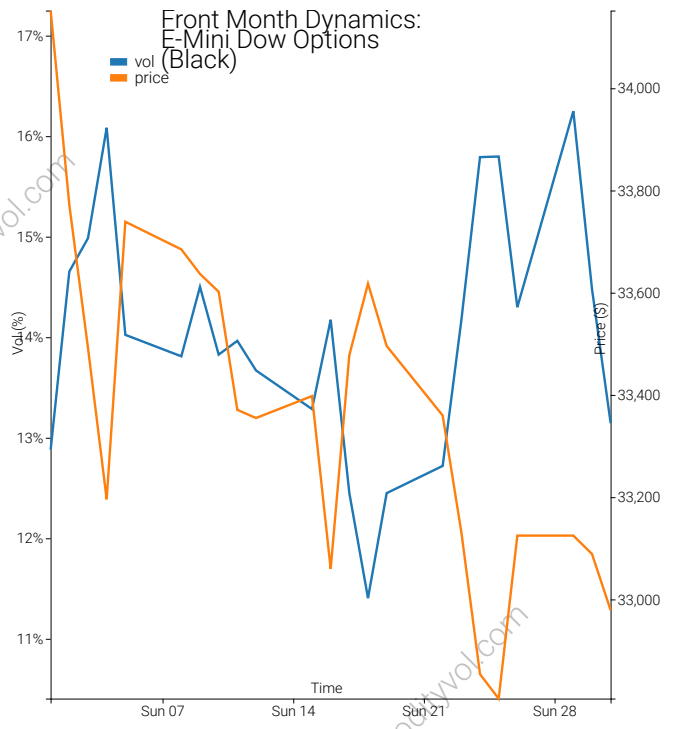
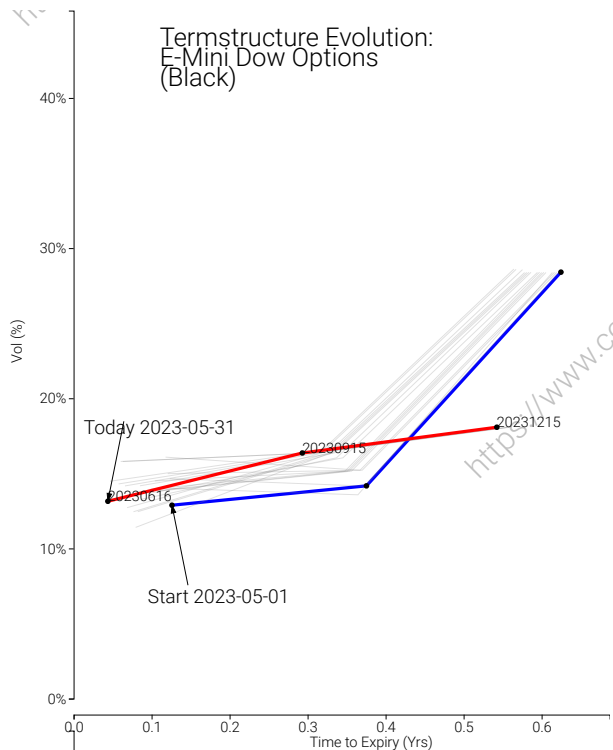
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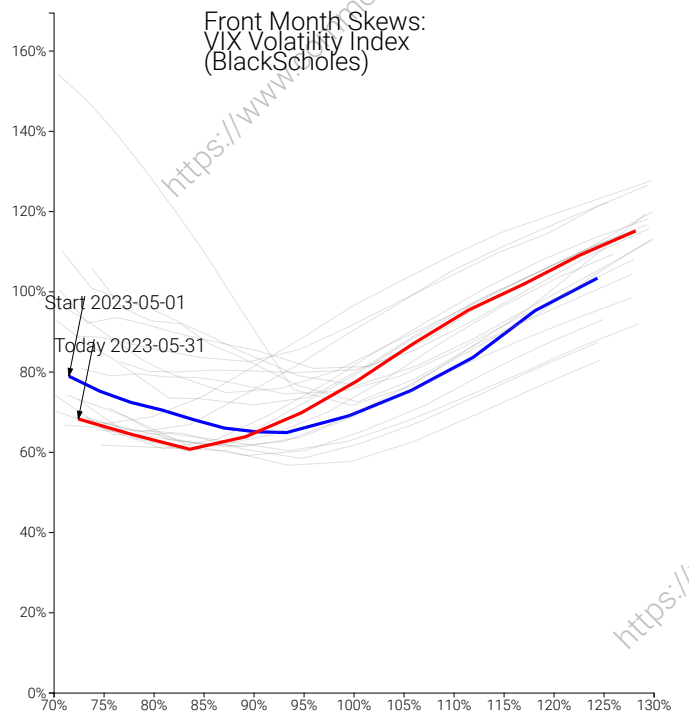
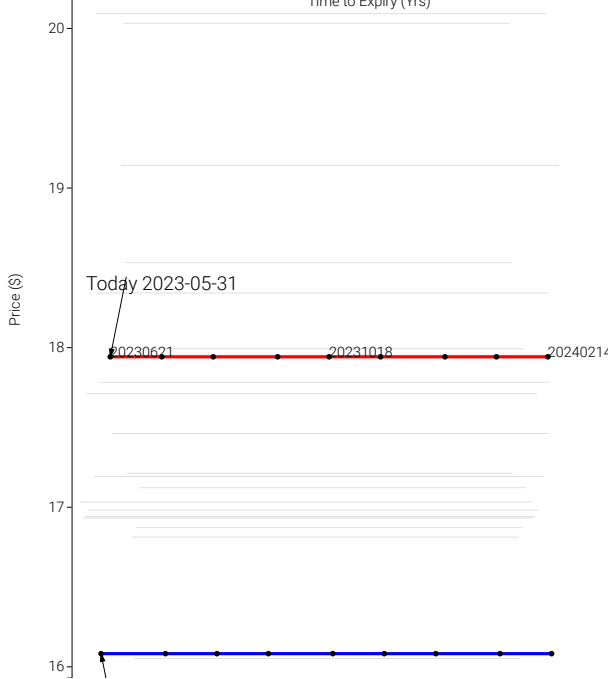
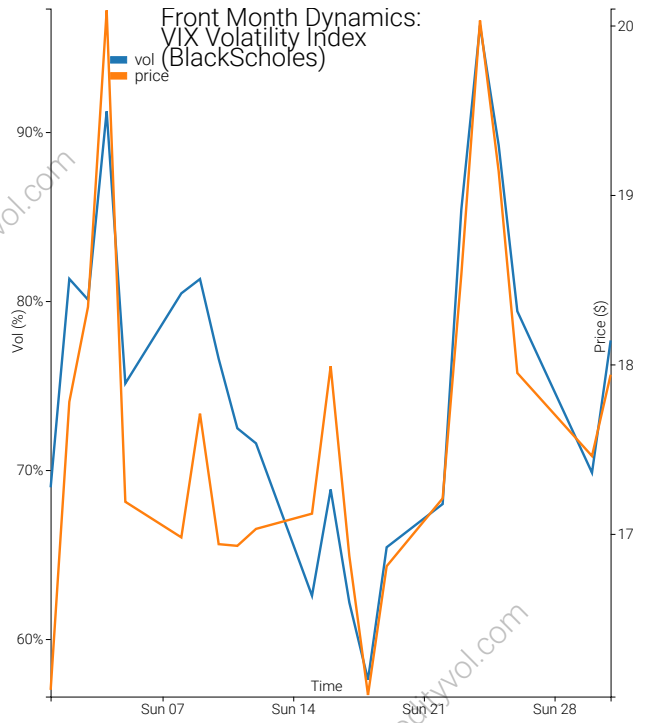
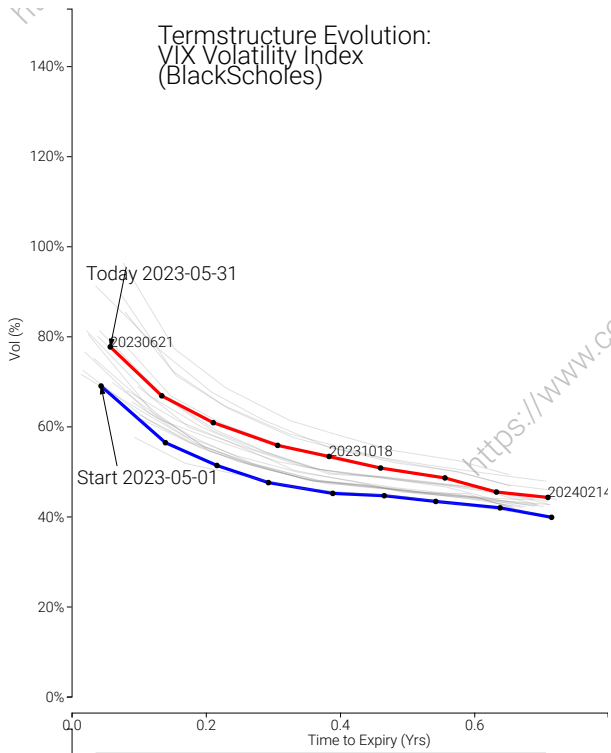




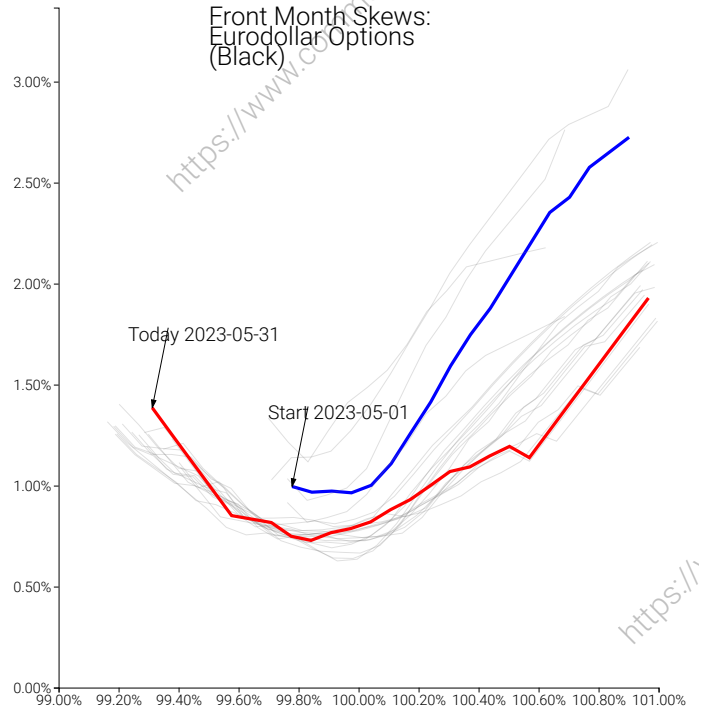
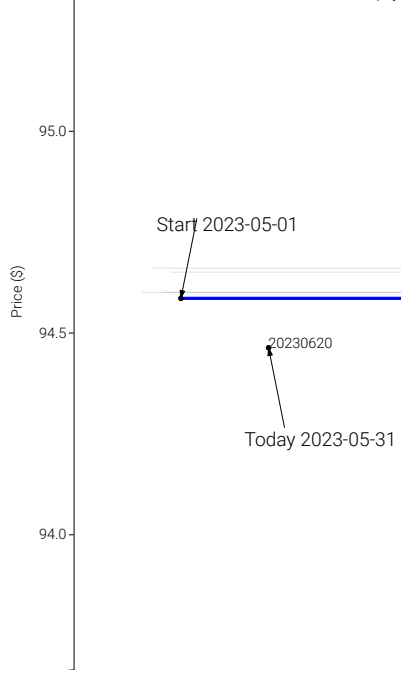
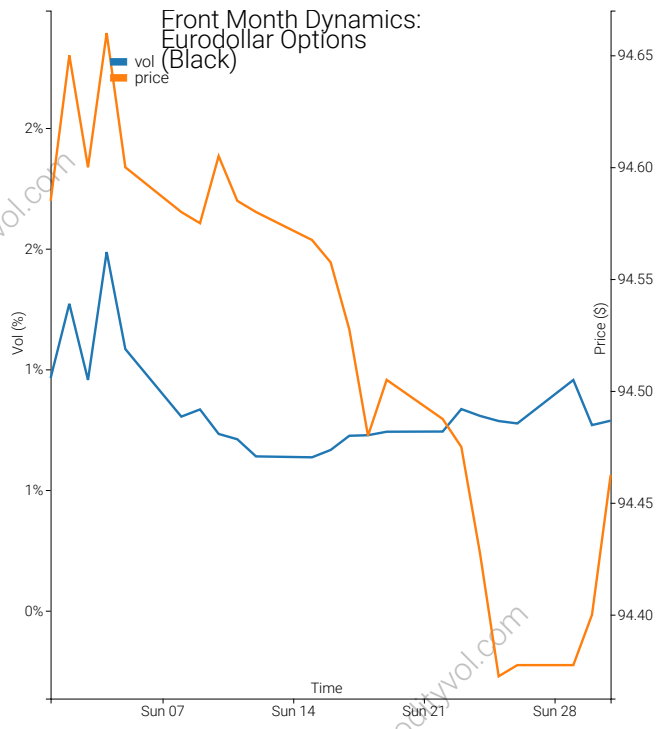
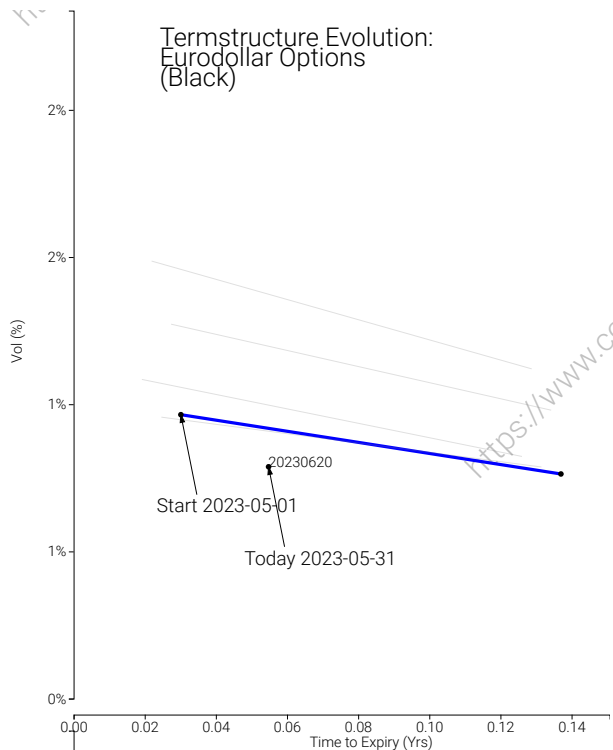


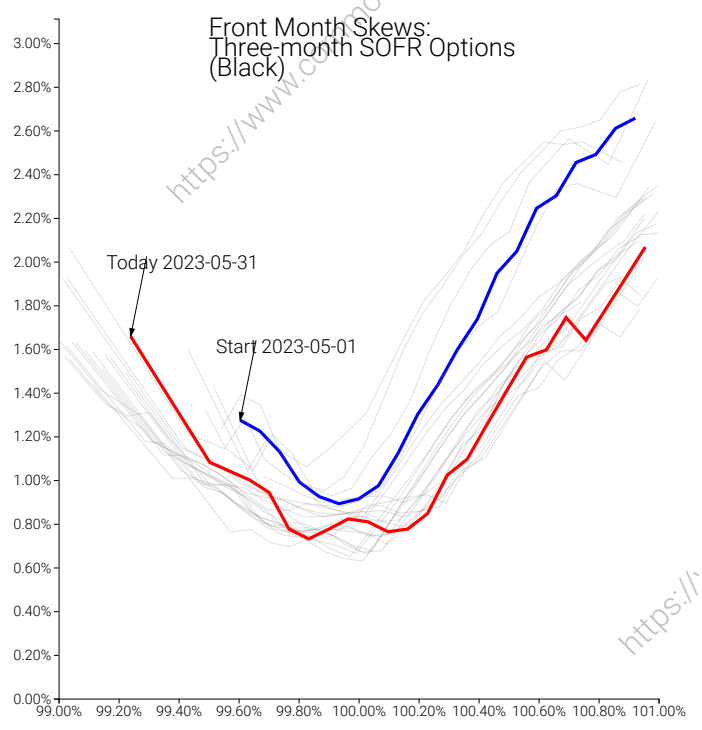
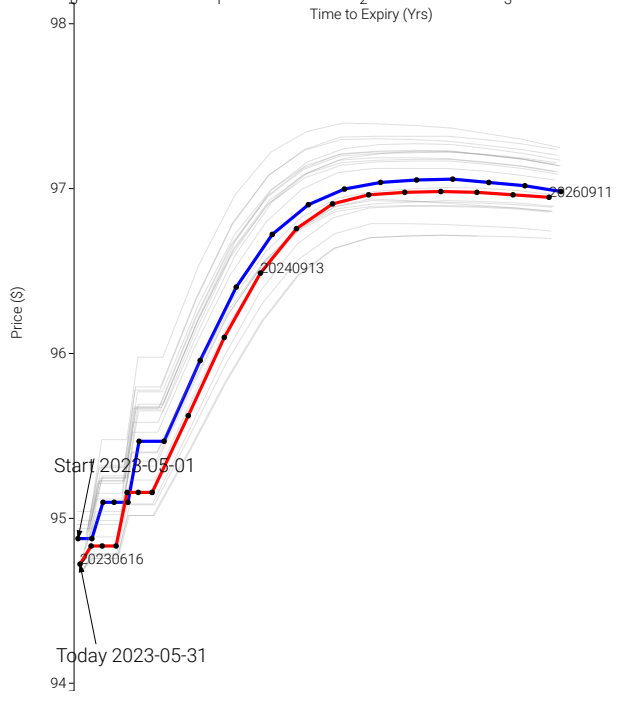
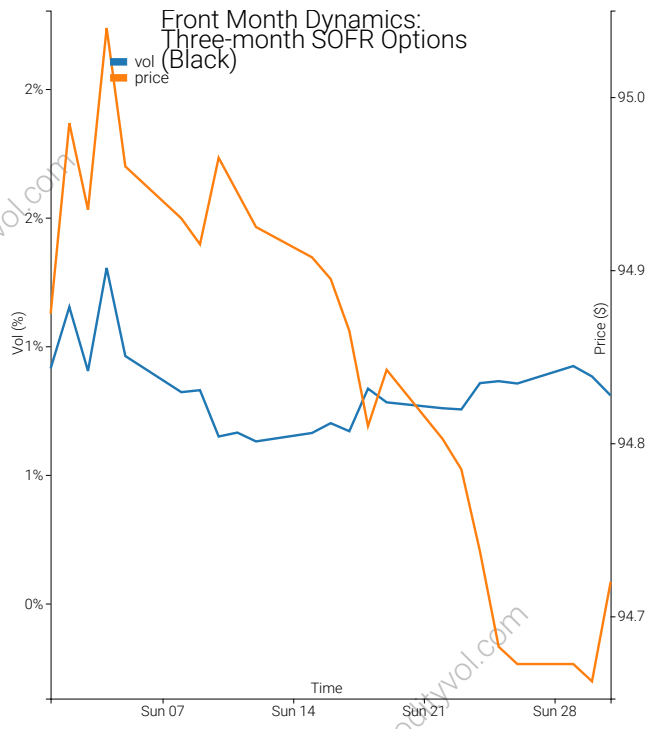
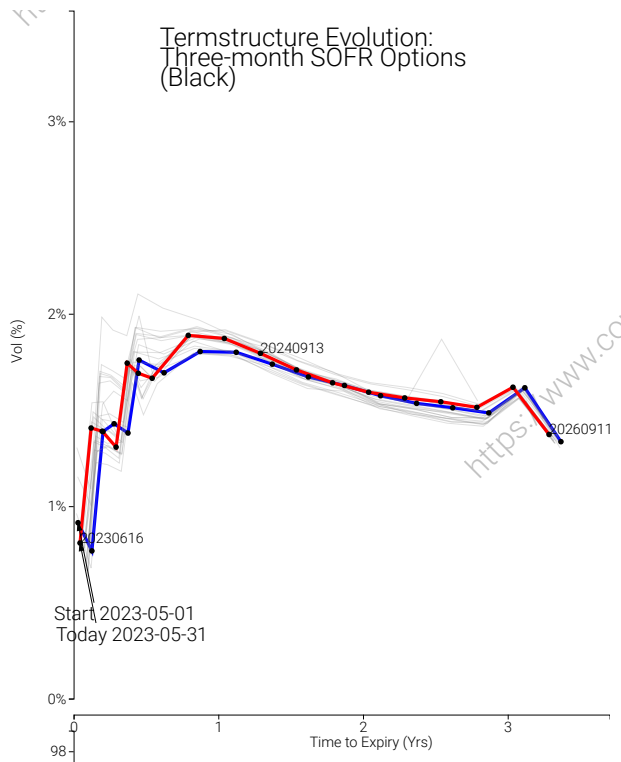


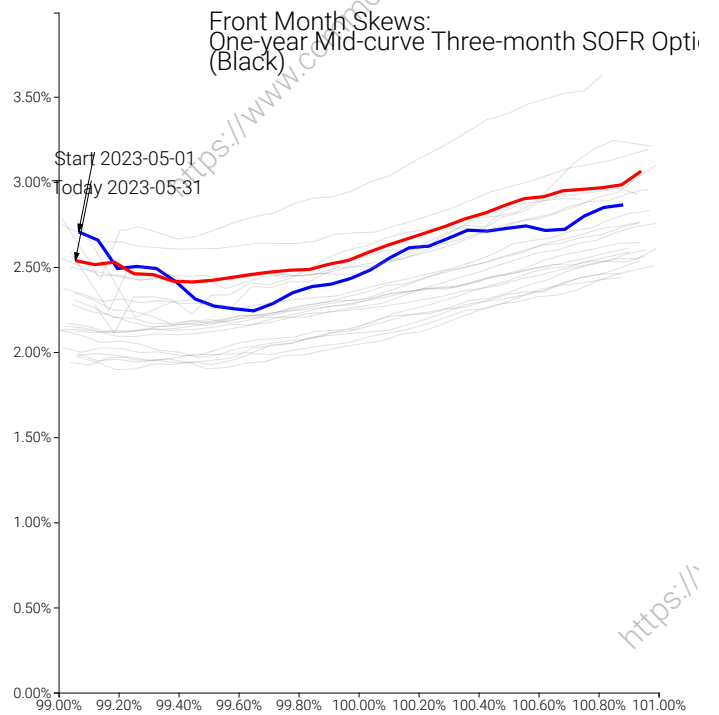
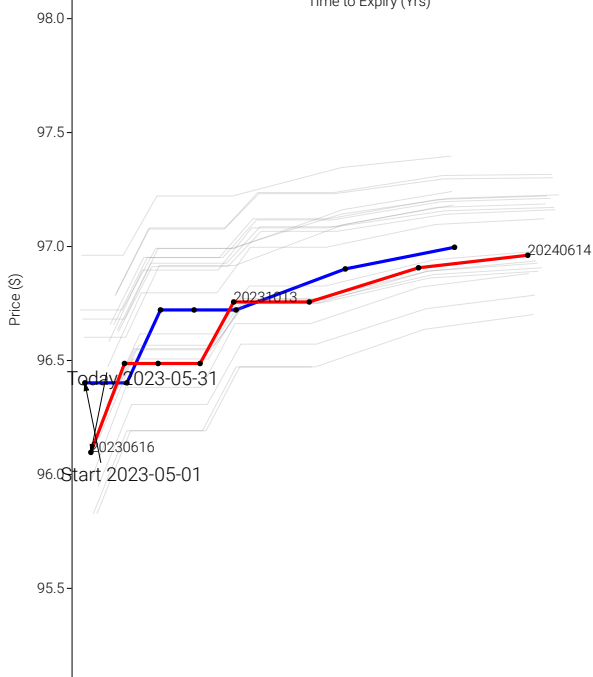
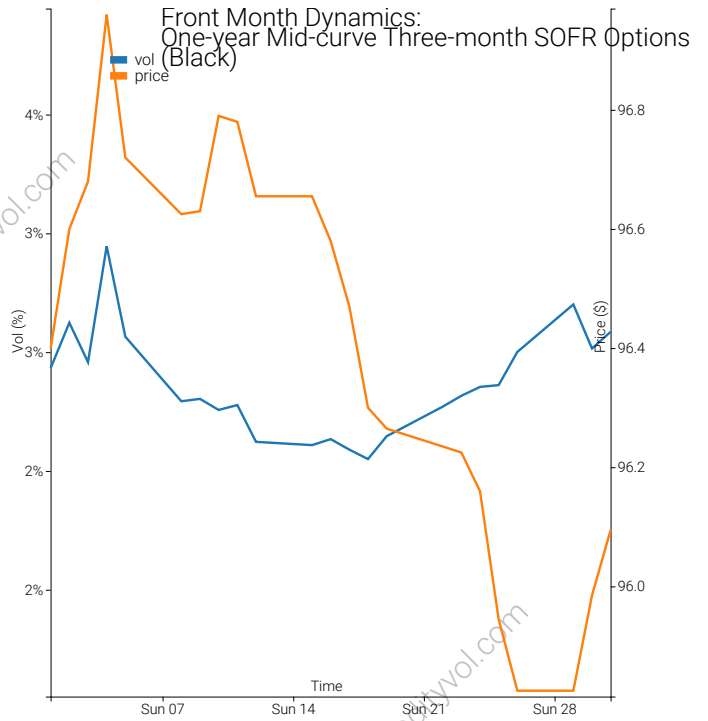
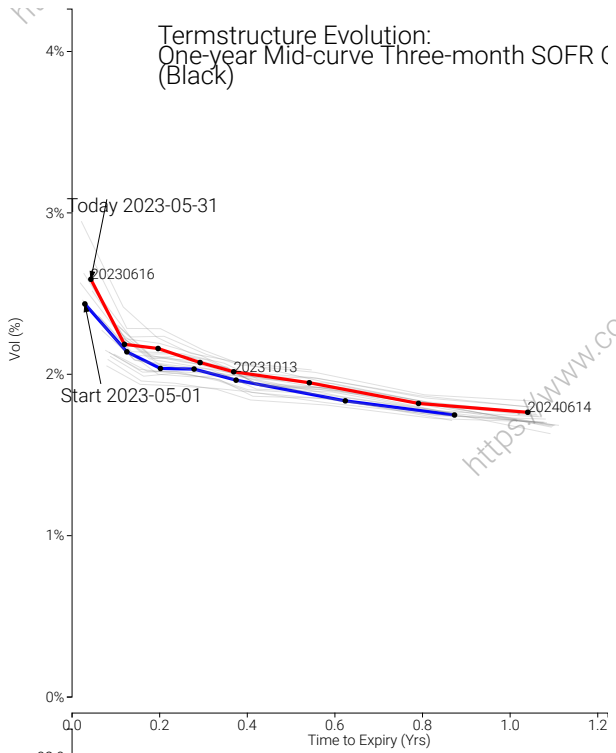


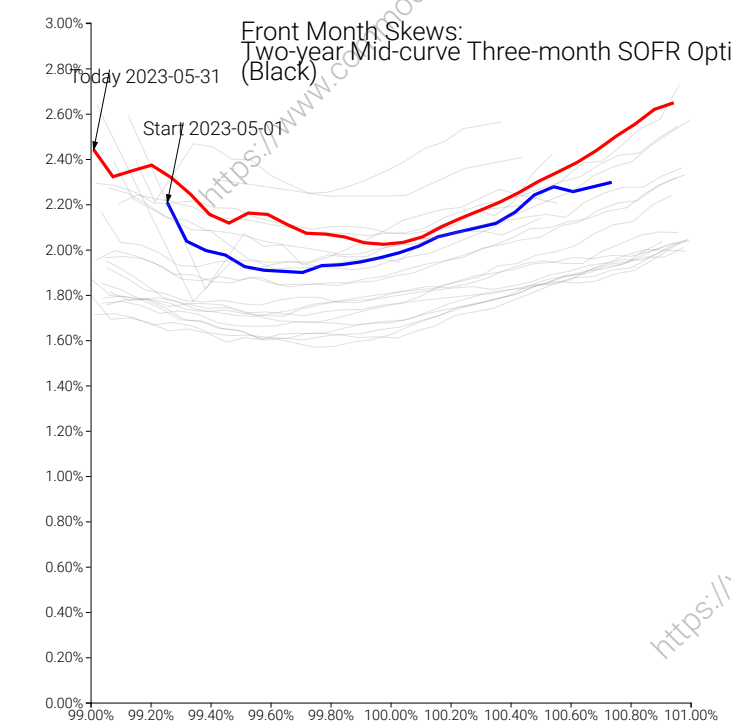
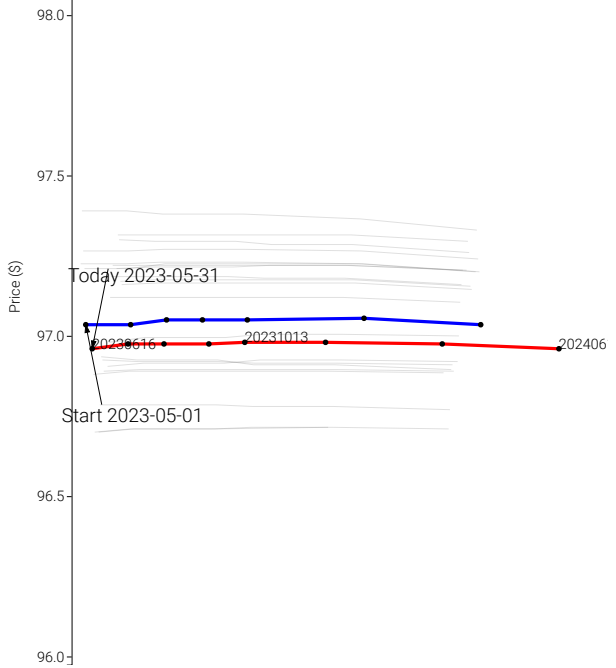
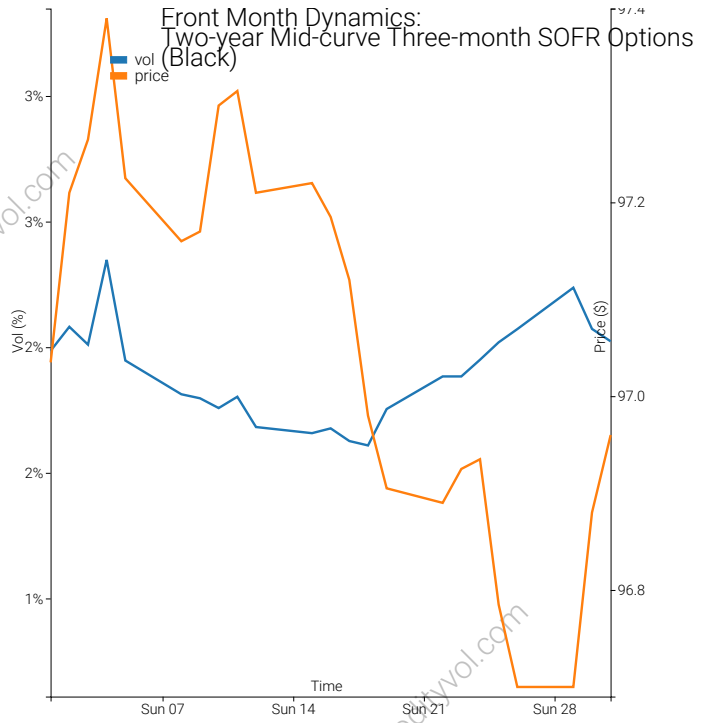
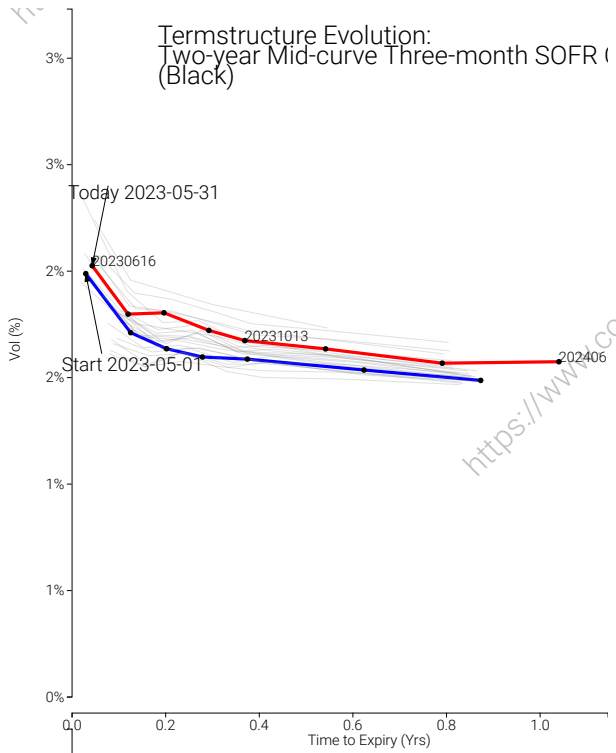


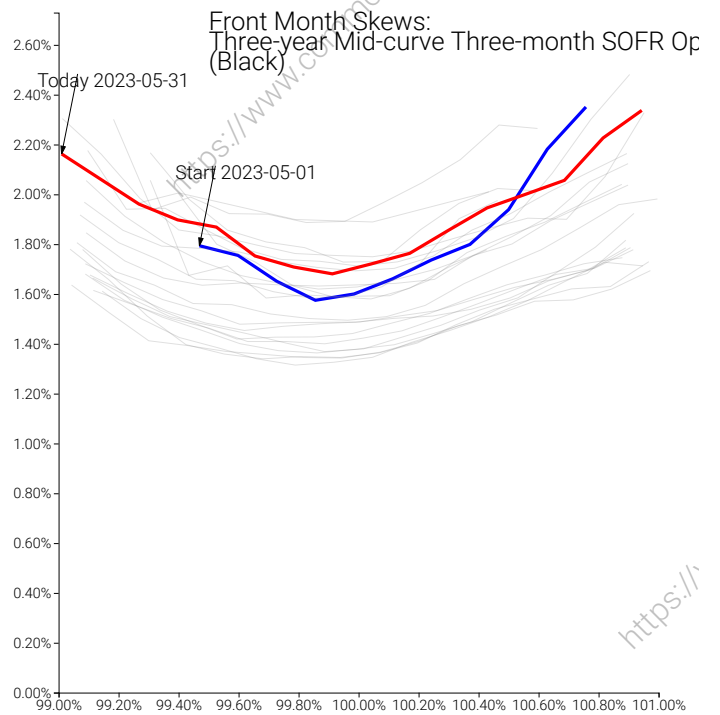
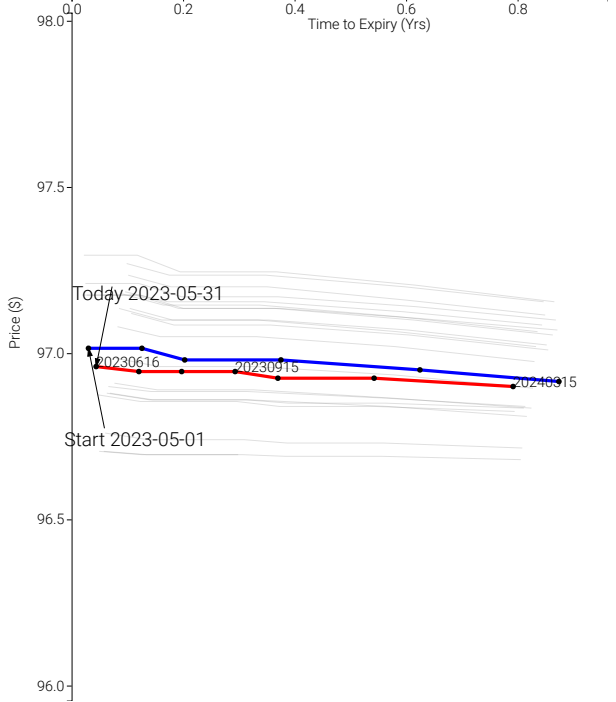
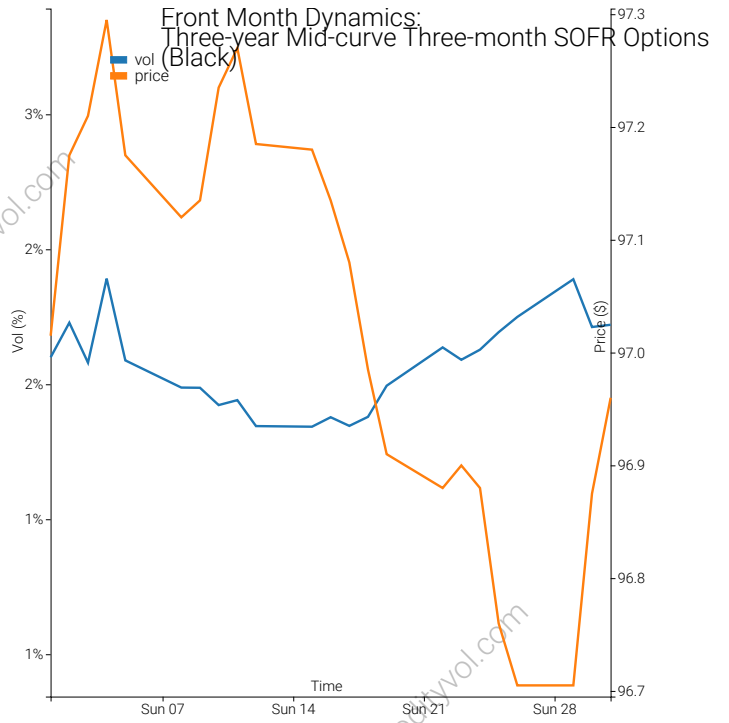
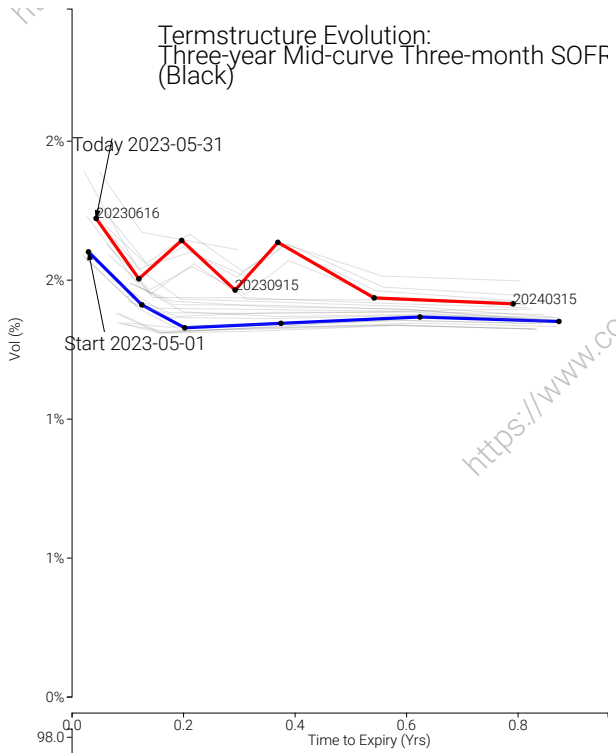
InterestRates: Fixed Income and STIRS

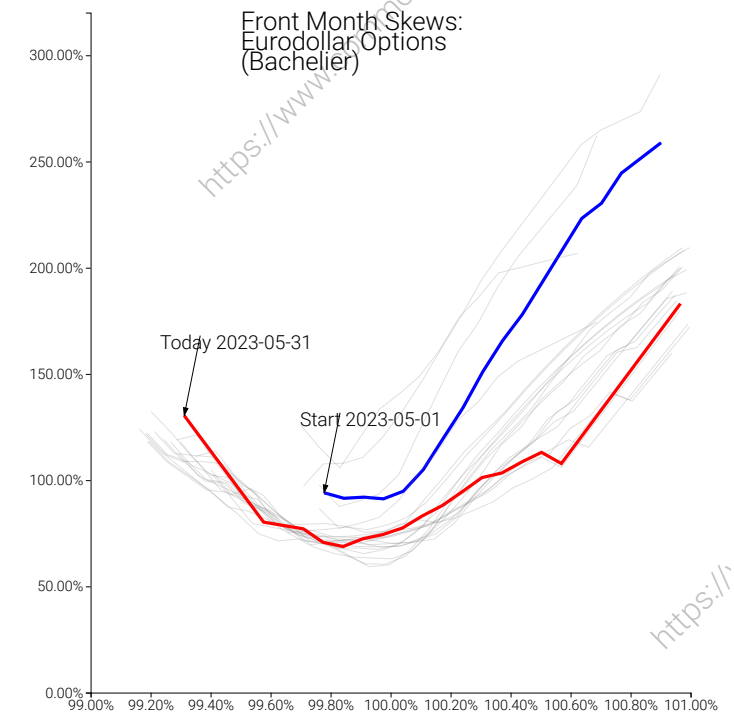
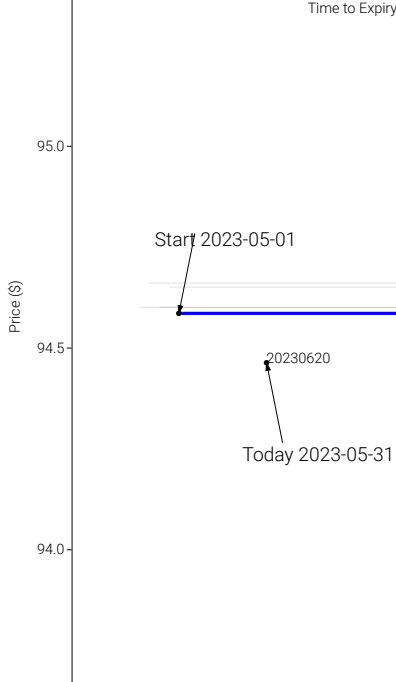
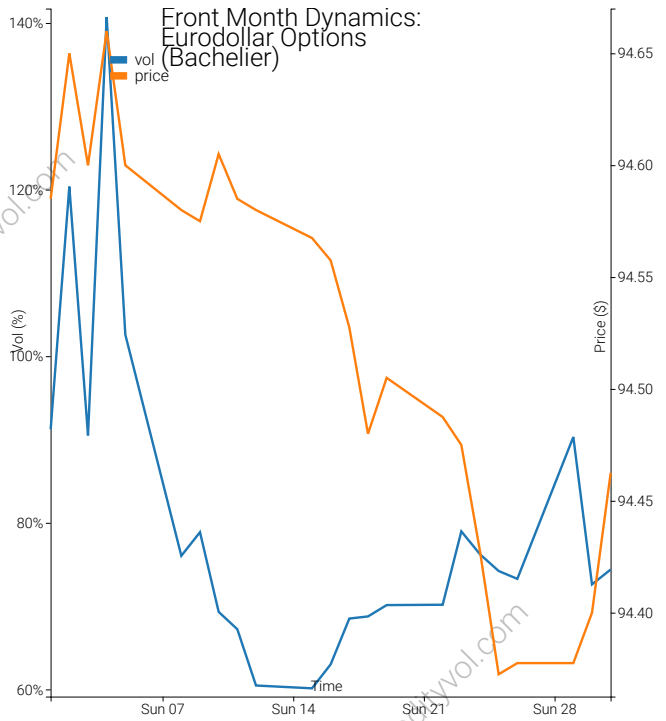
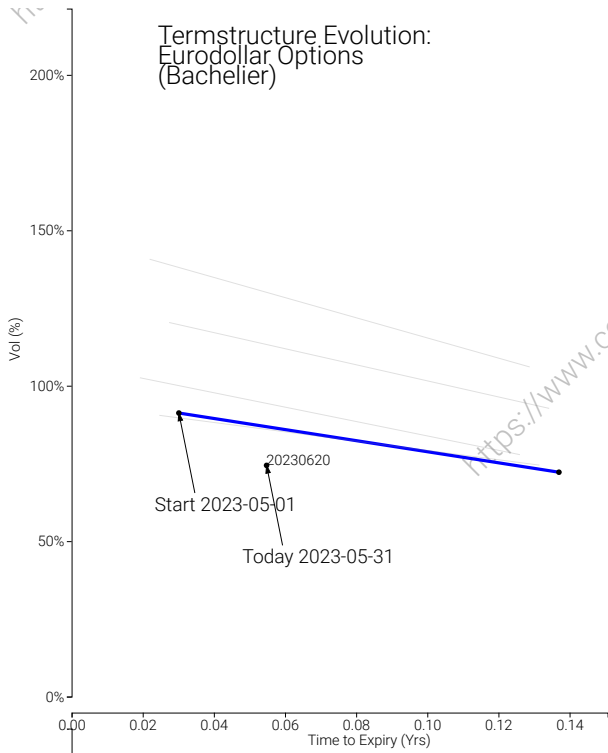


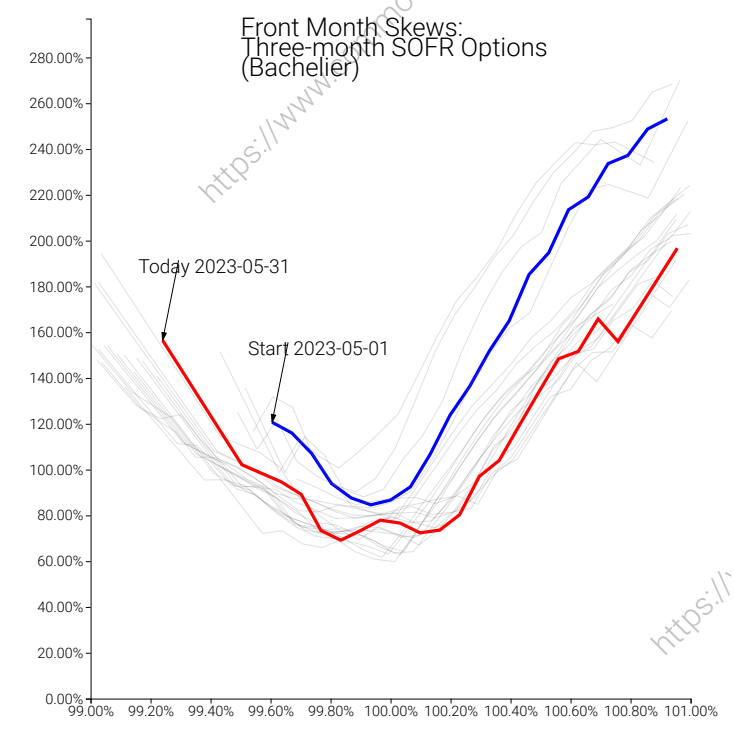
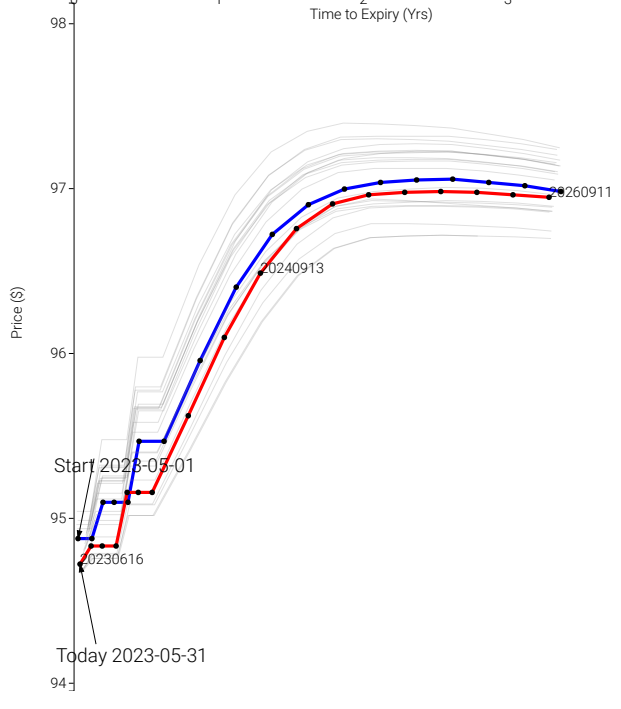
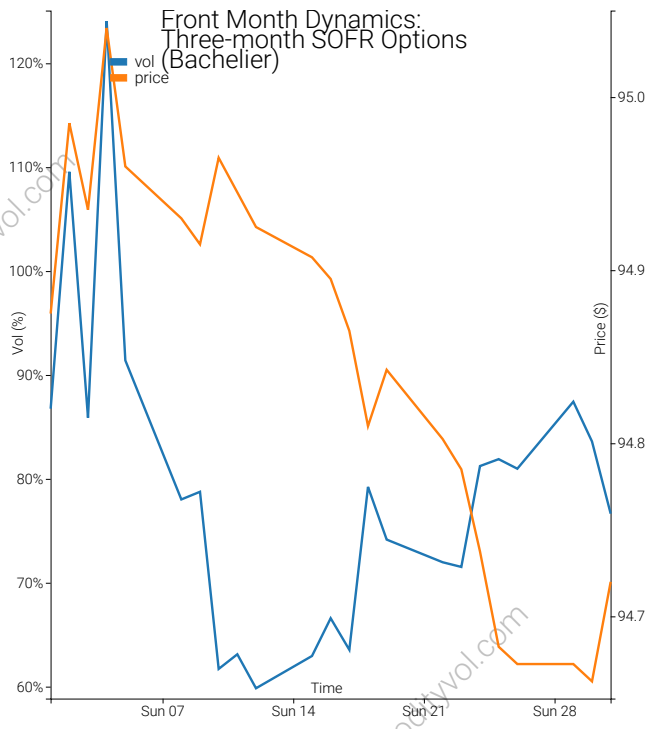
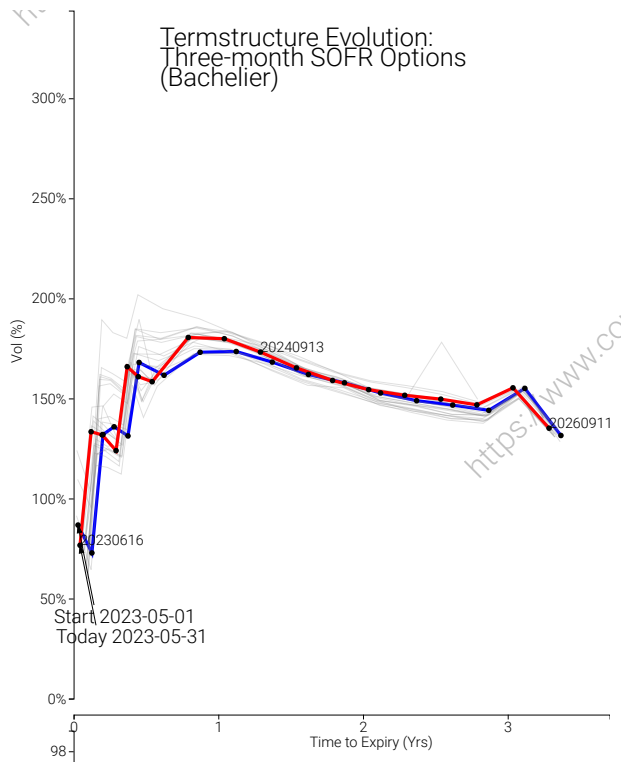


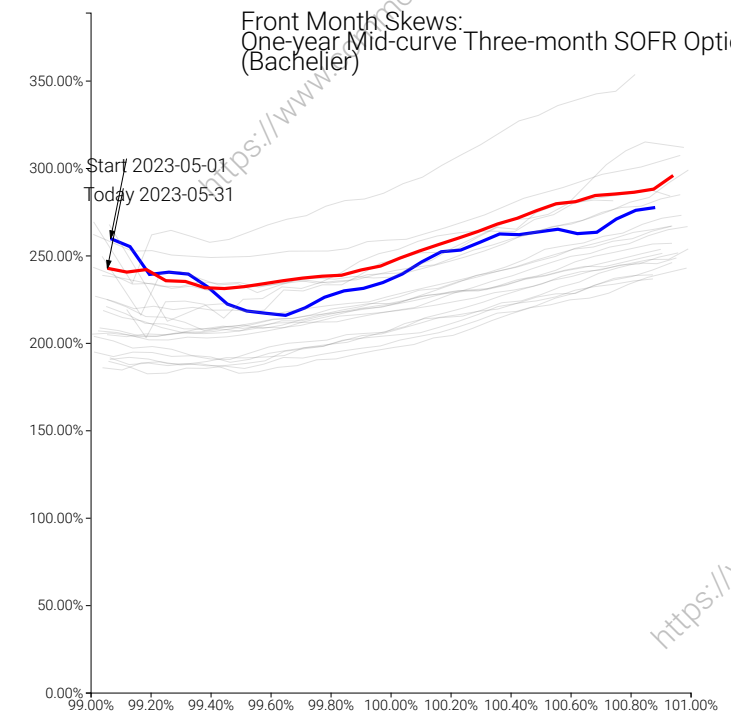
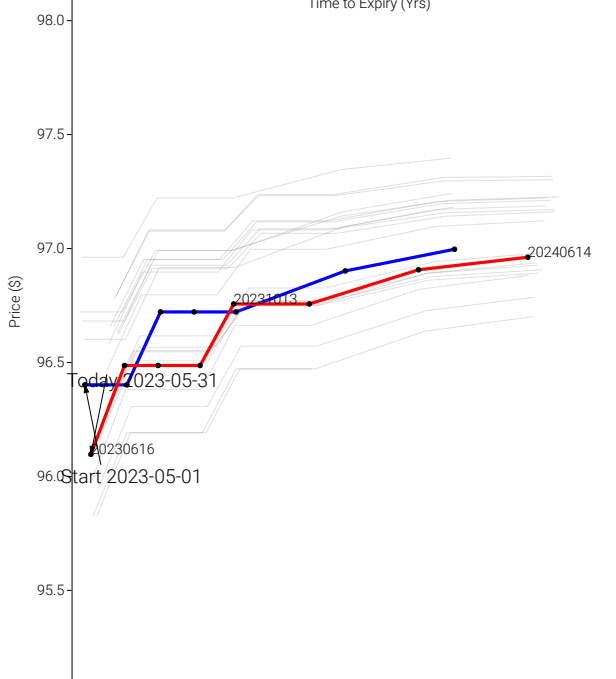
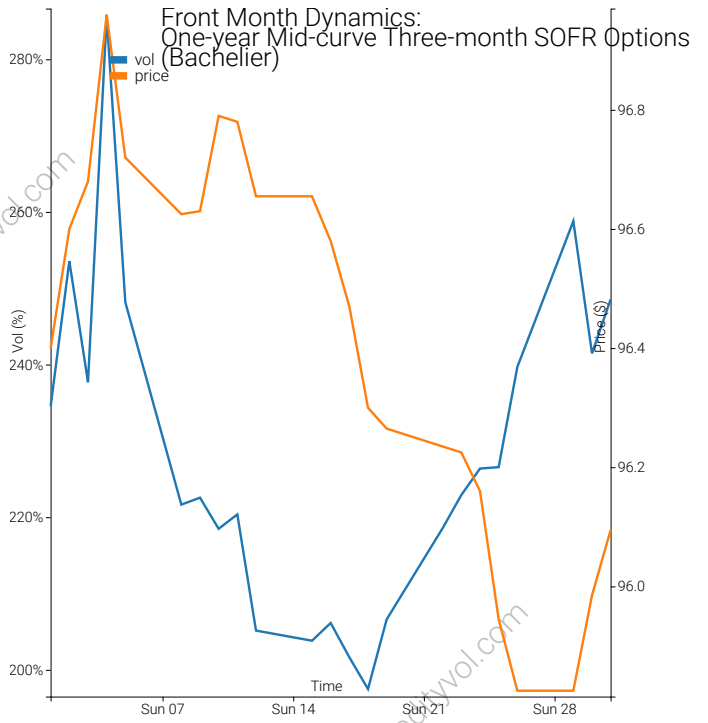
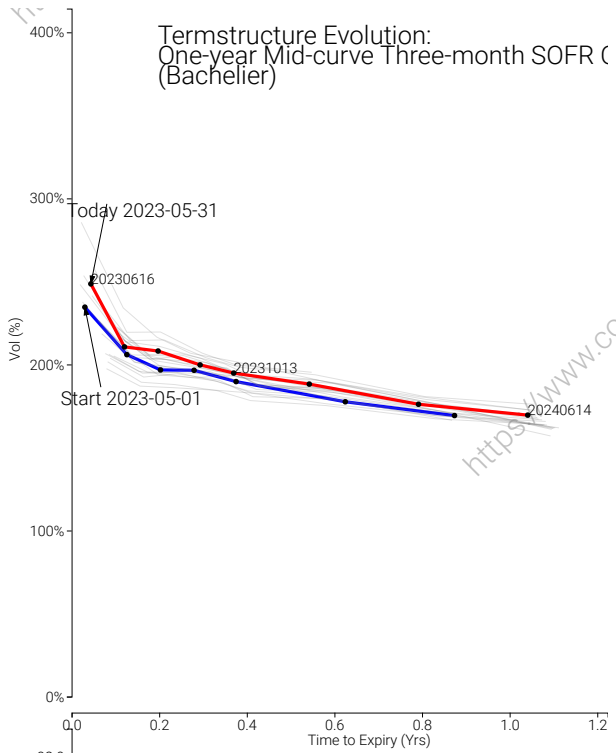


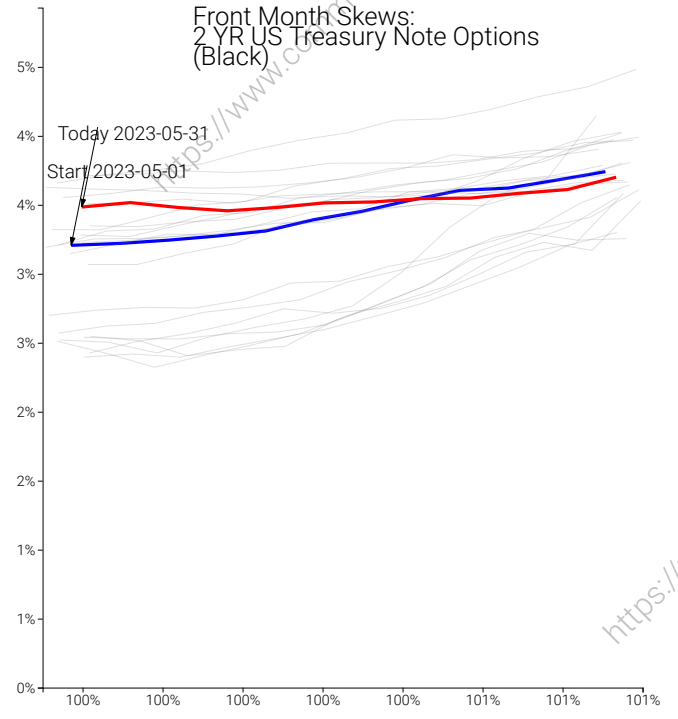
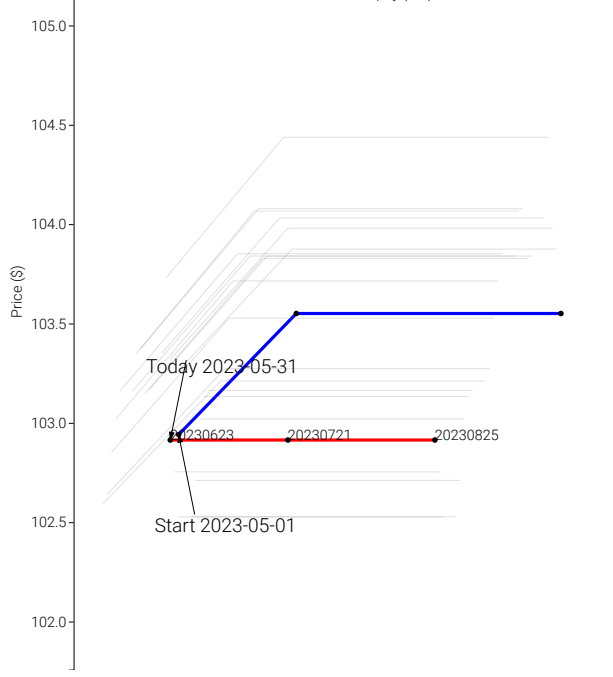
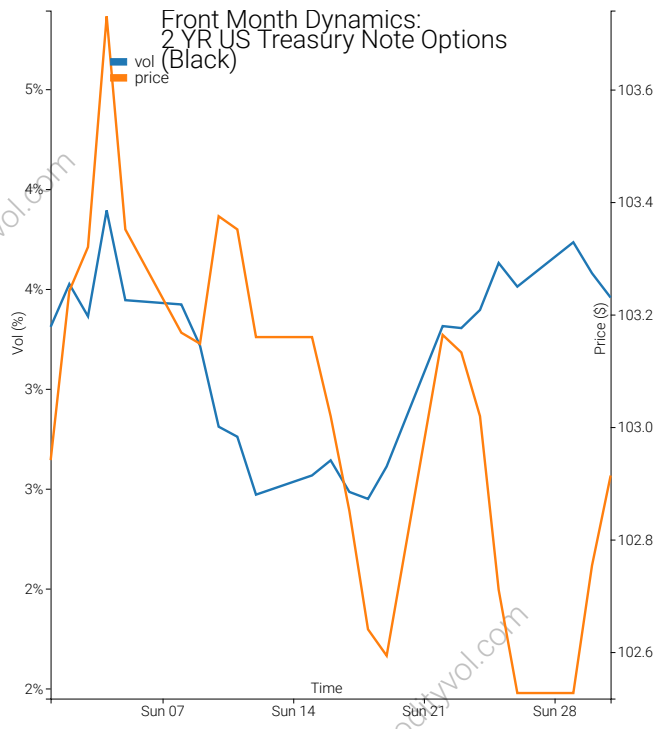
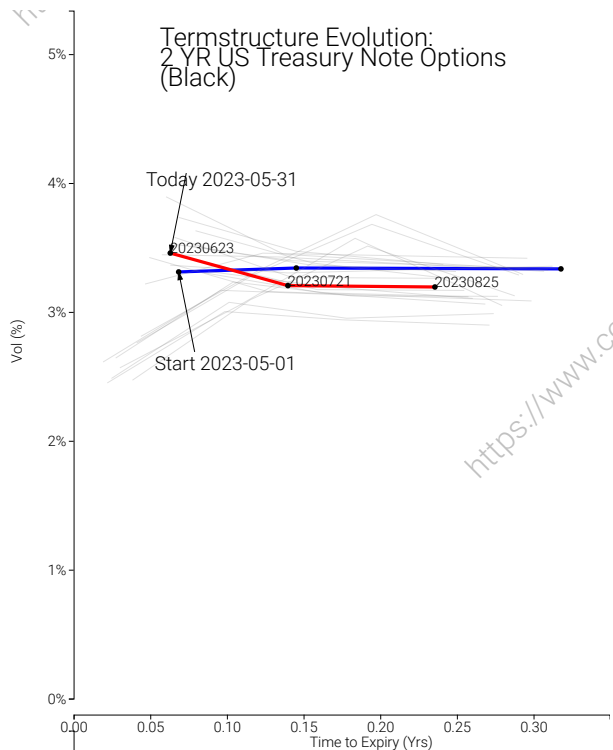


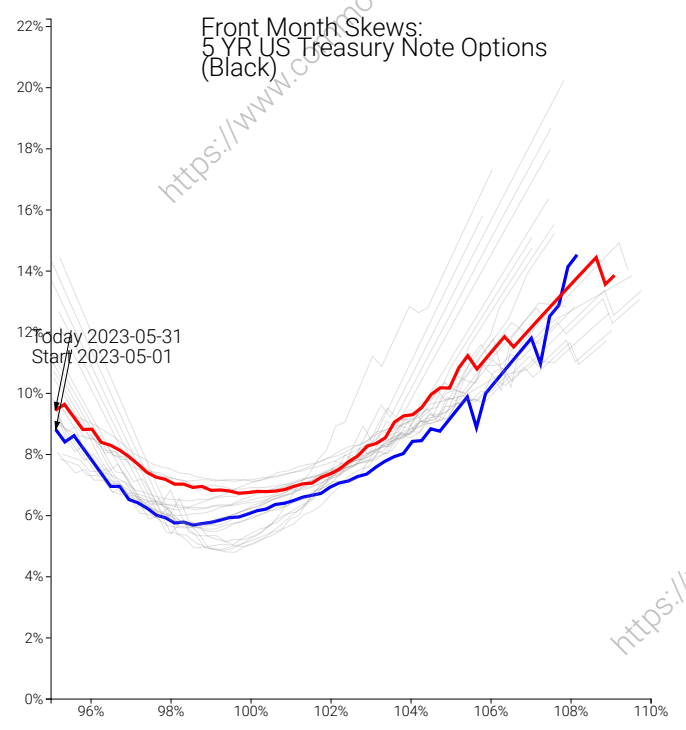
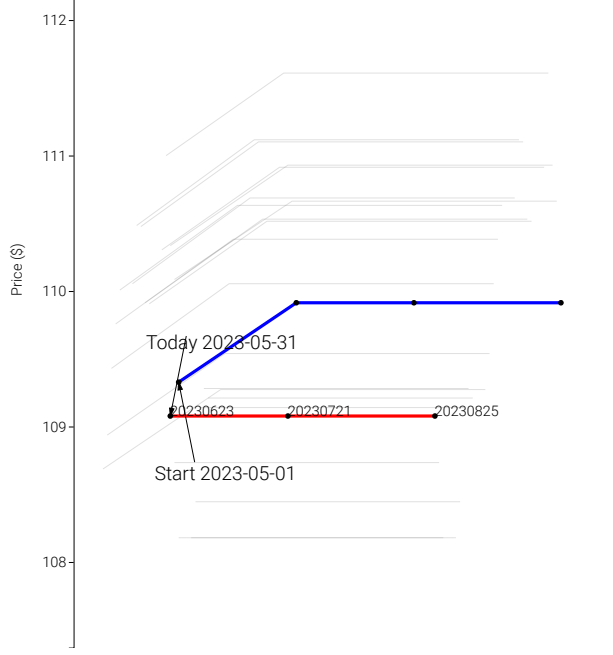
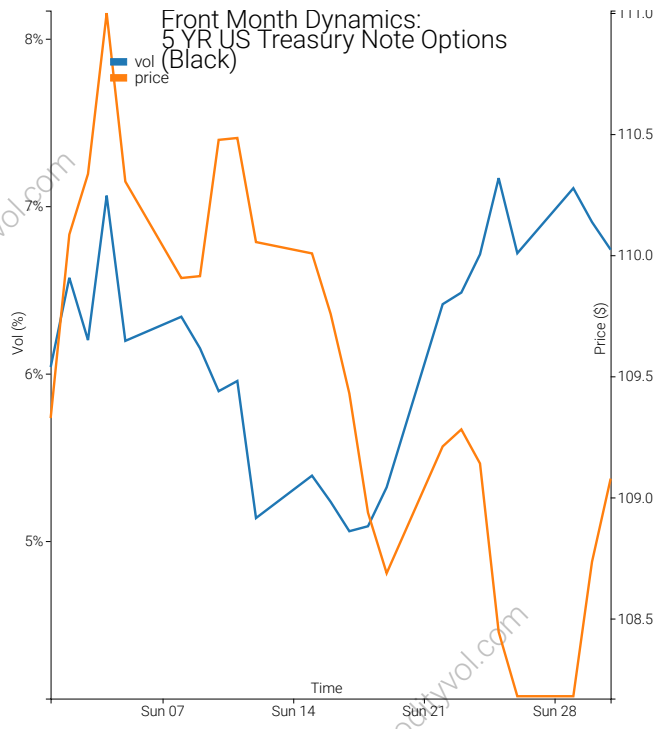
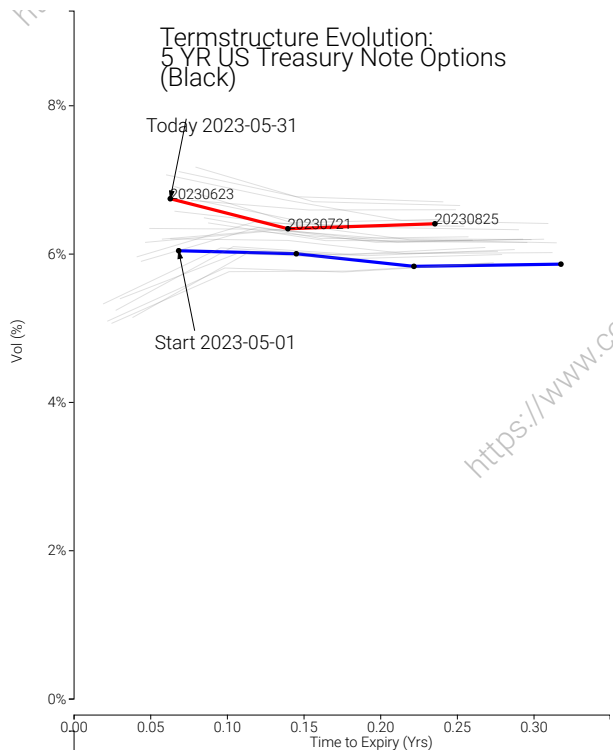


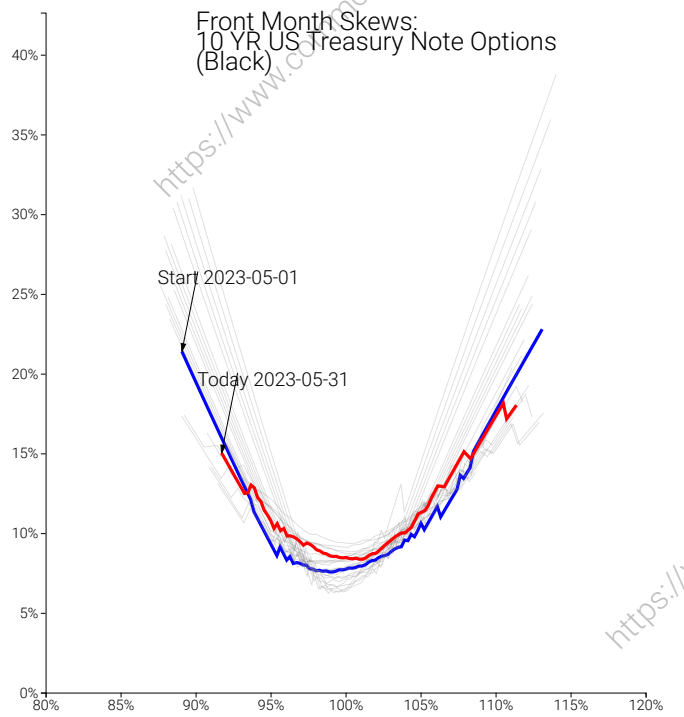
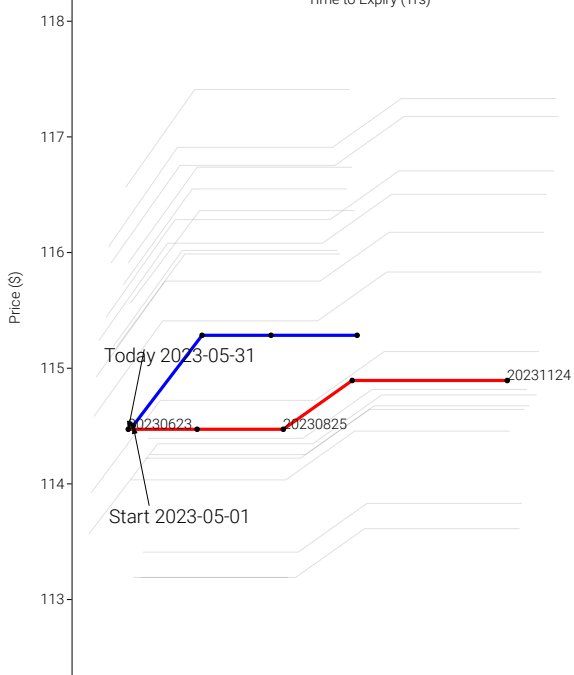
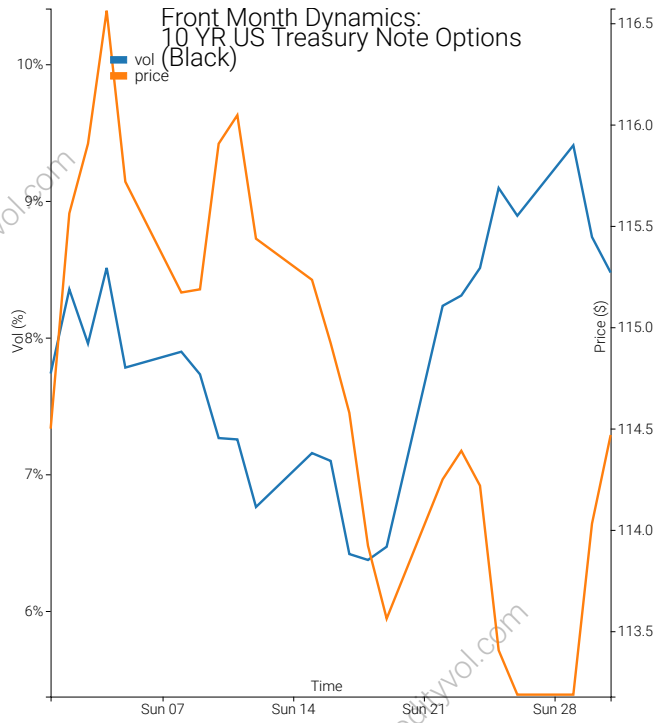
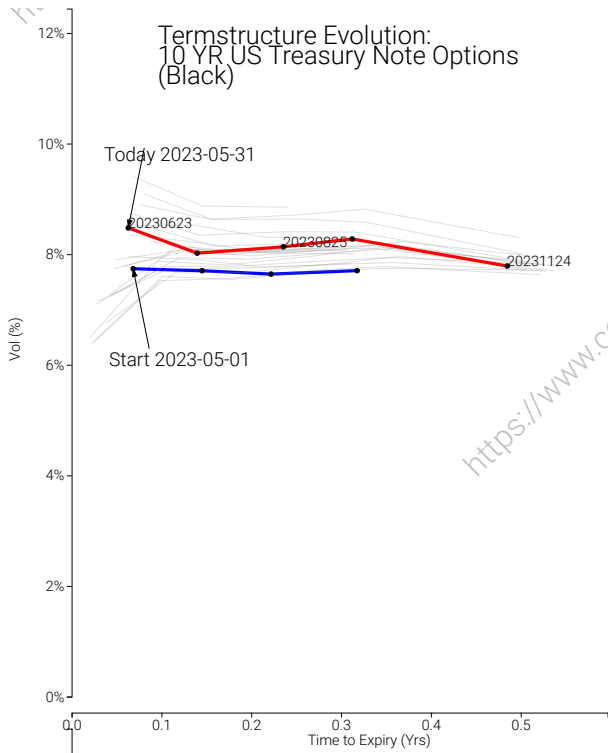


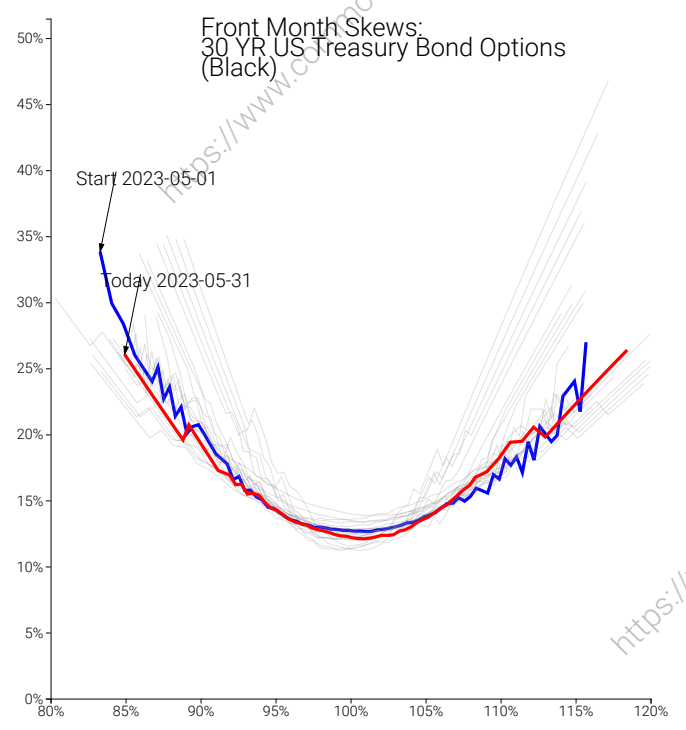
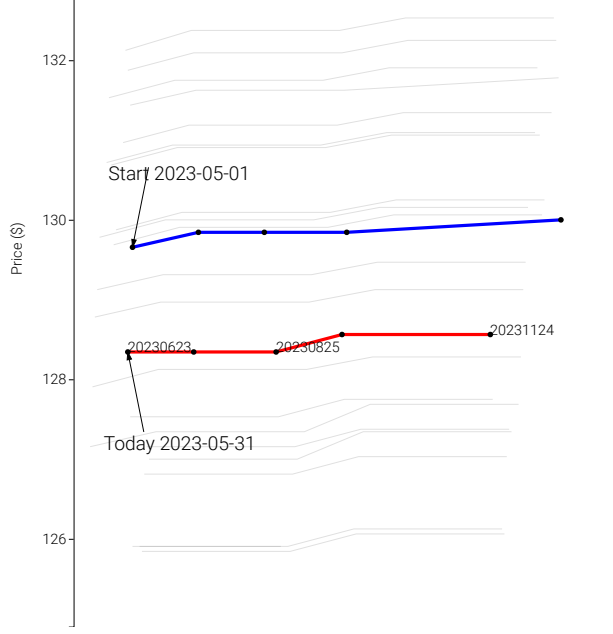
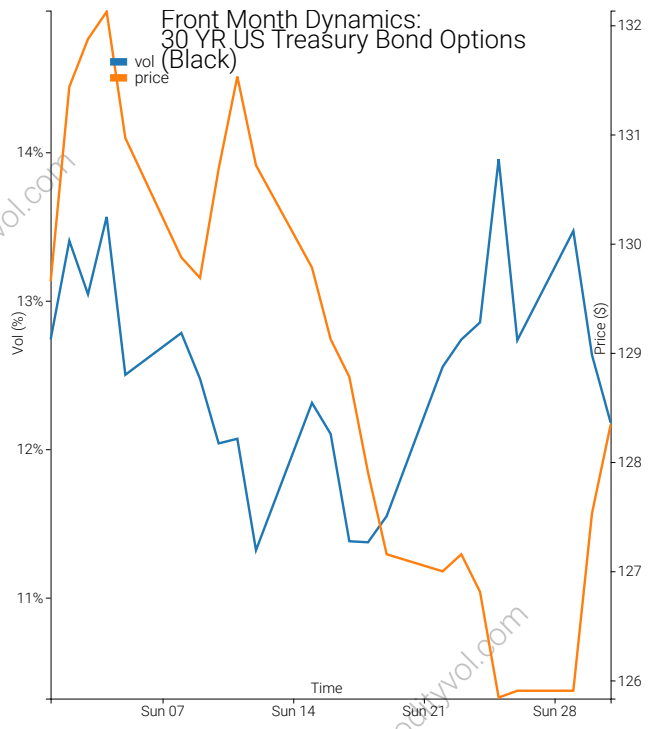
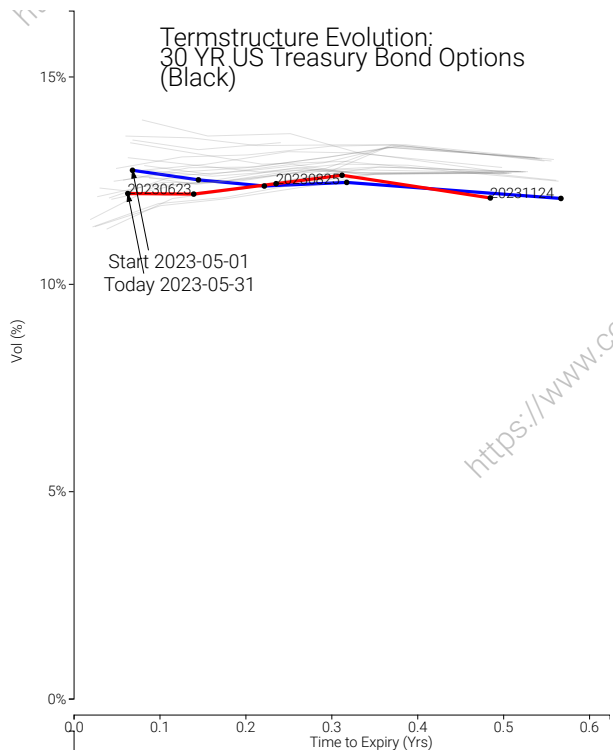


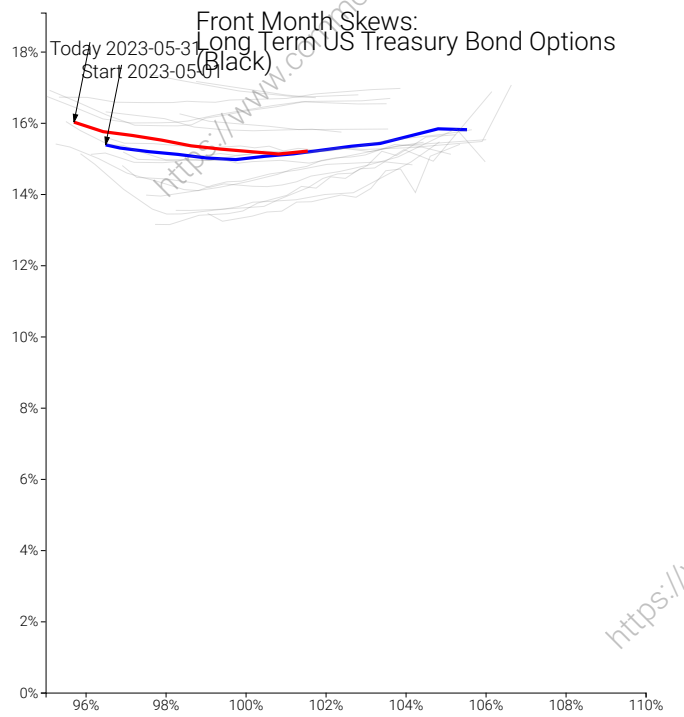
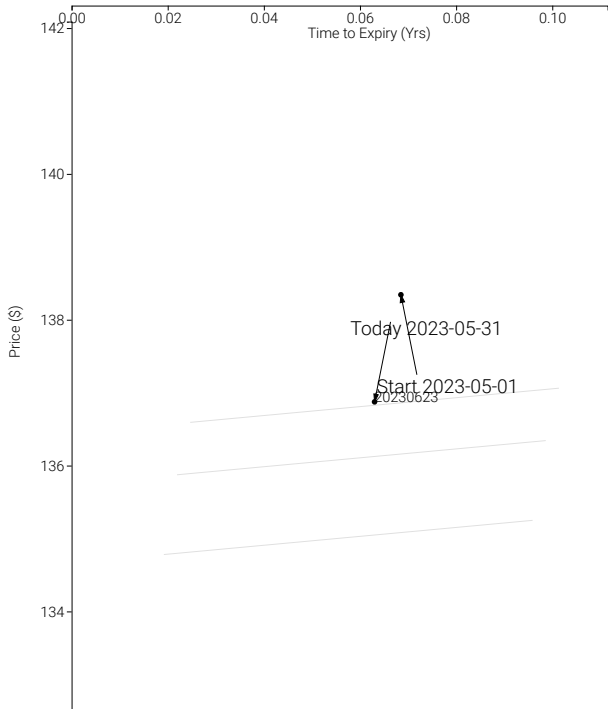
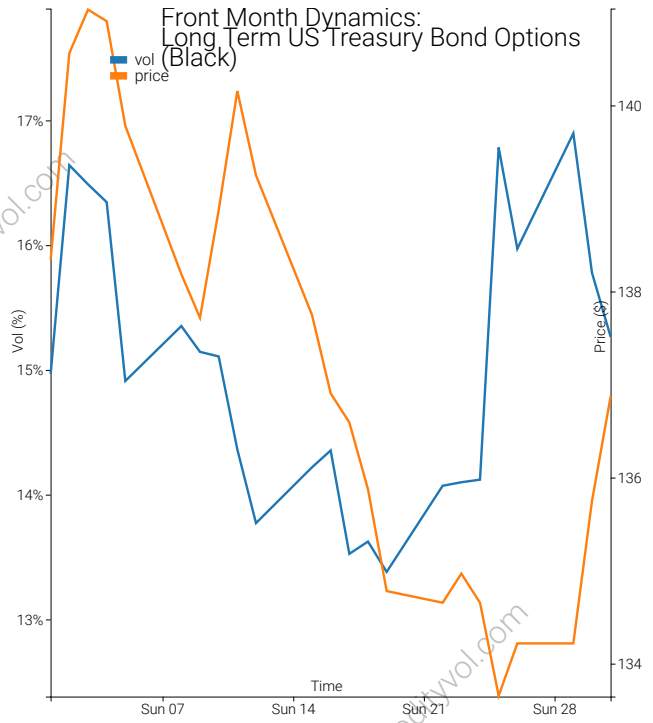
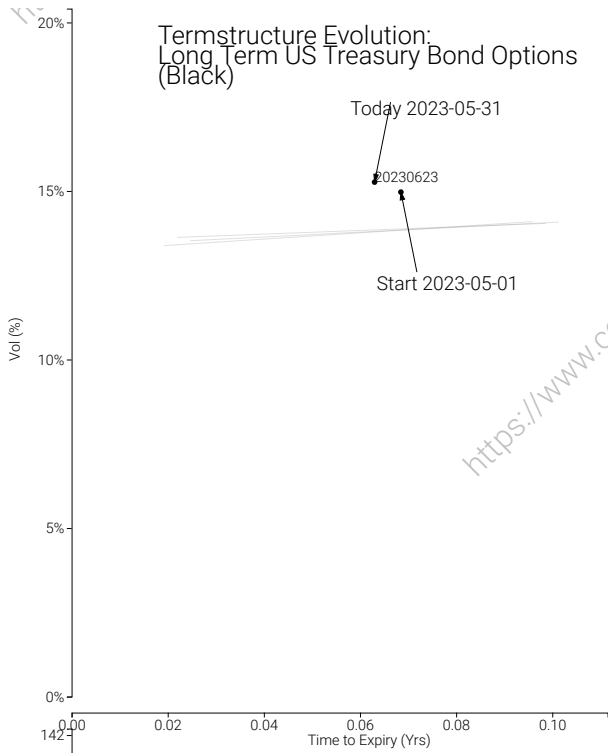




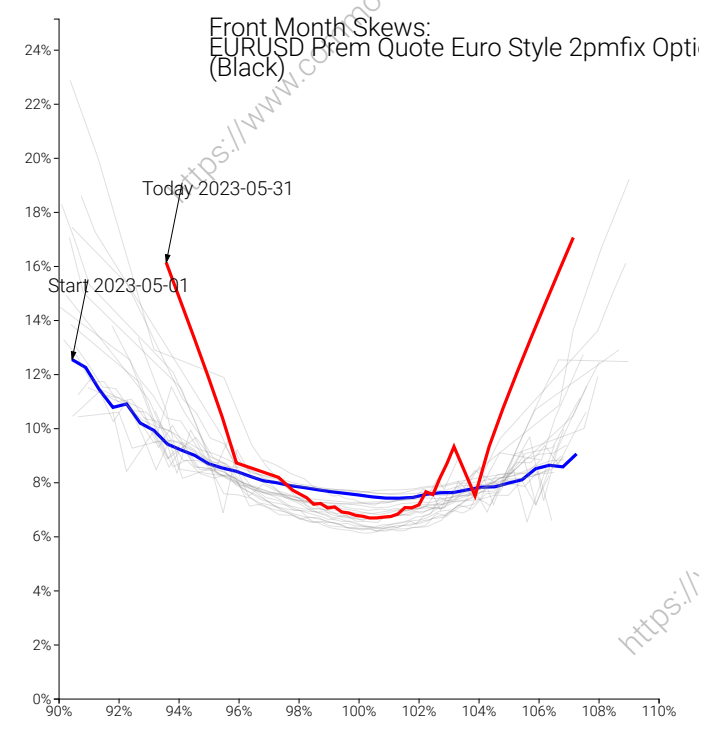
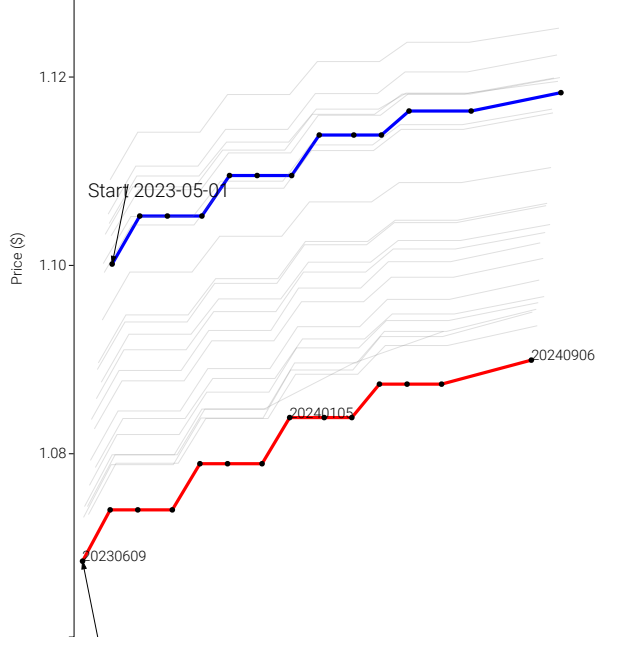
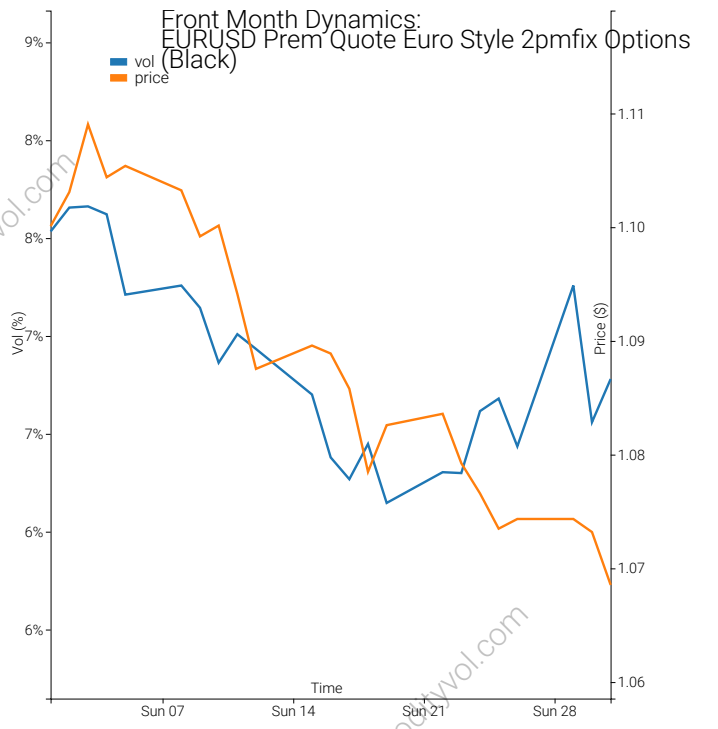
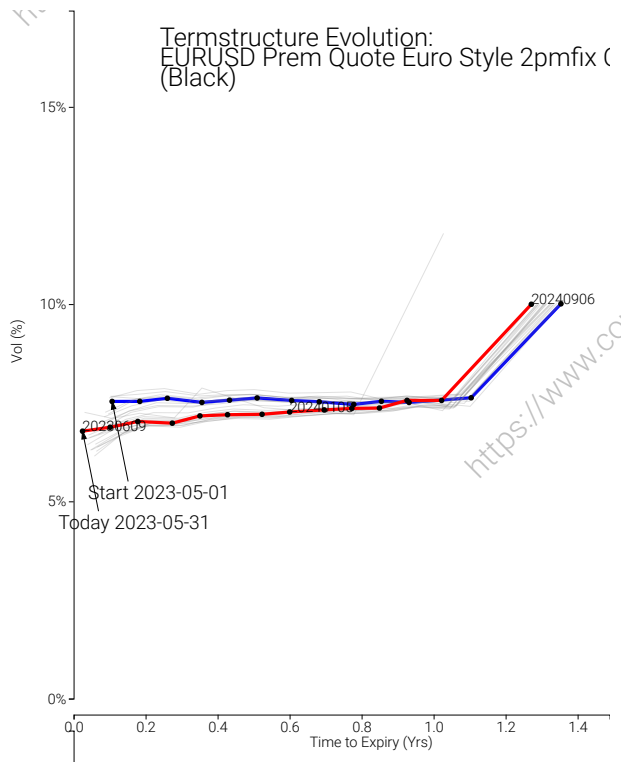


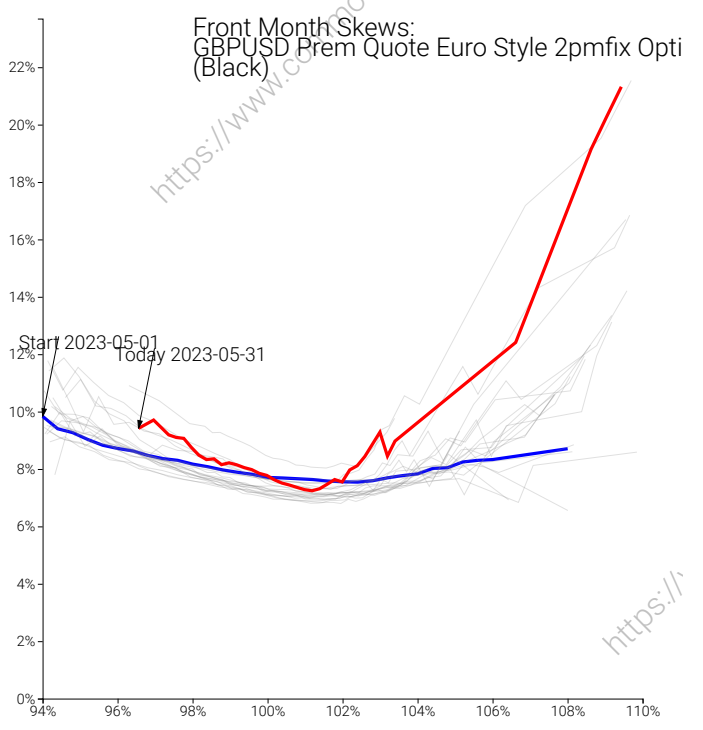
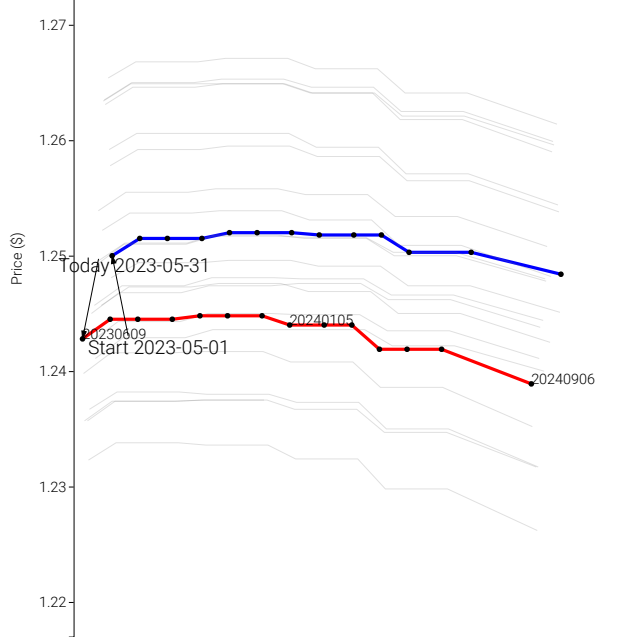
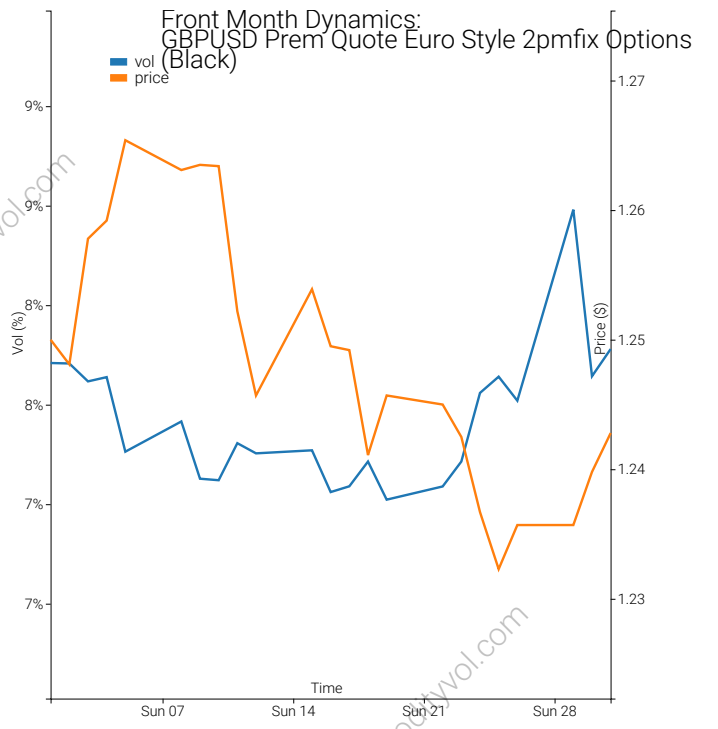
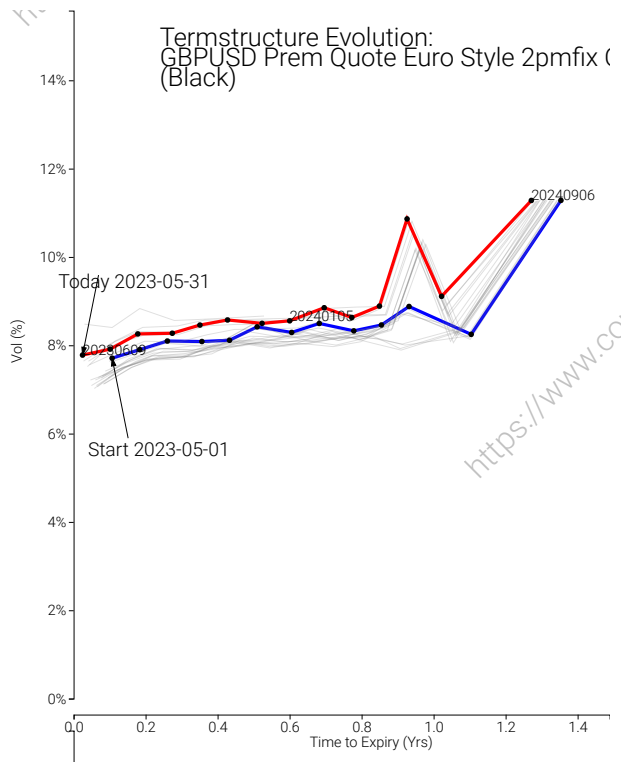


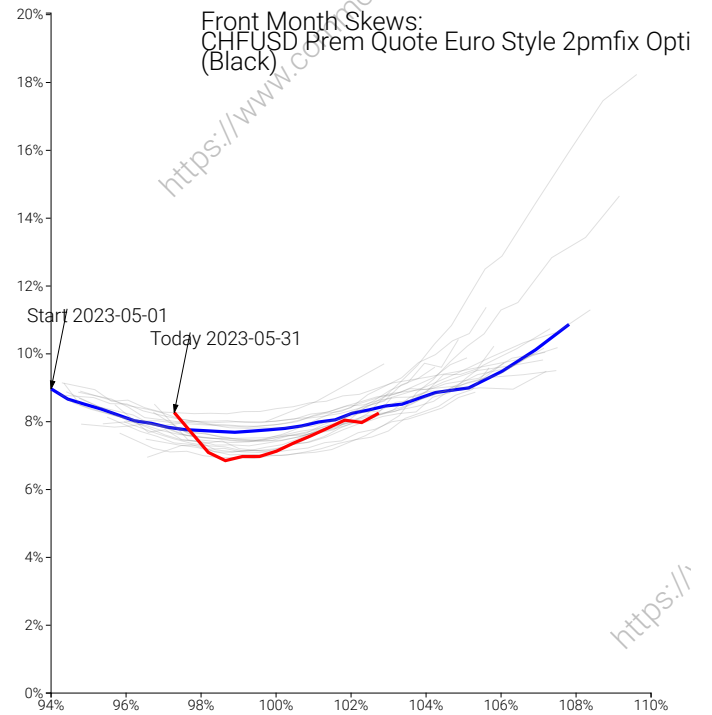
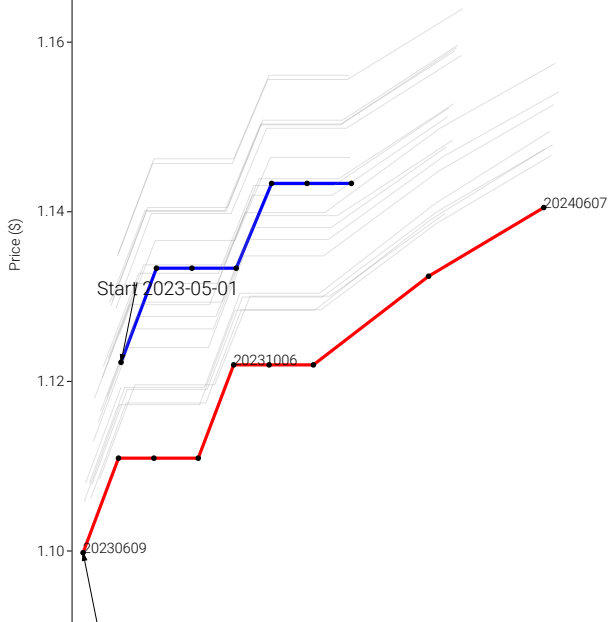
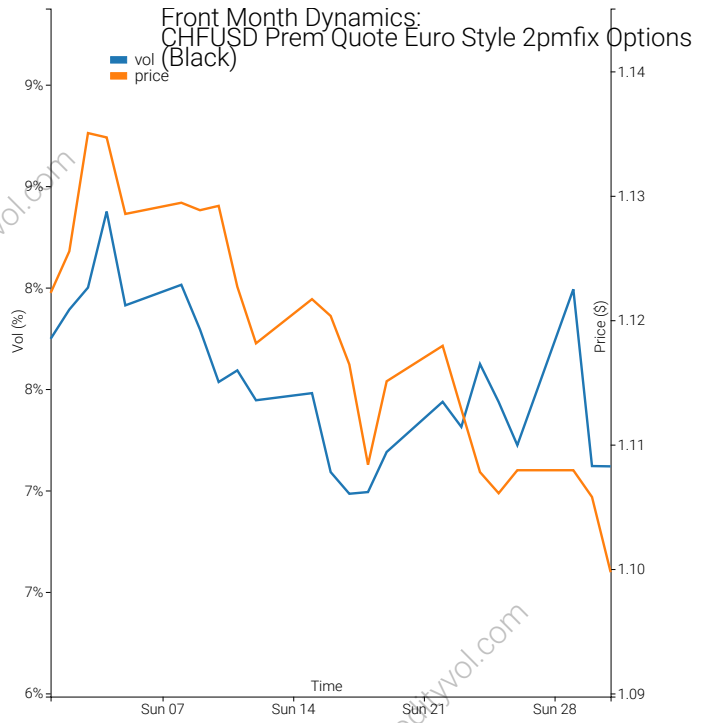
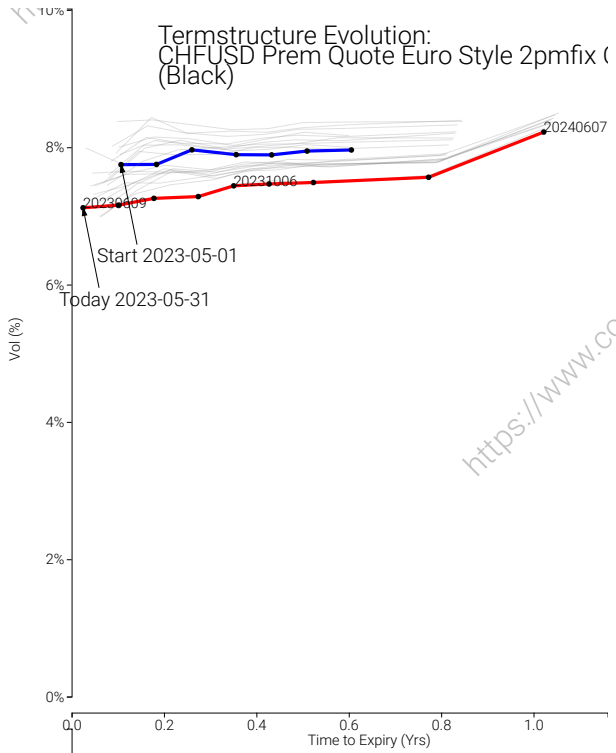


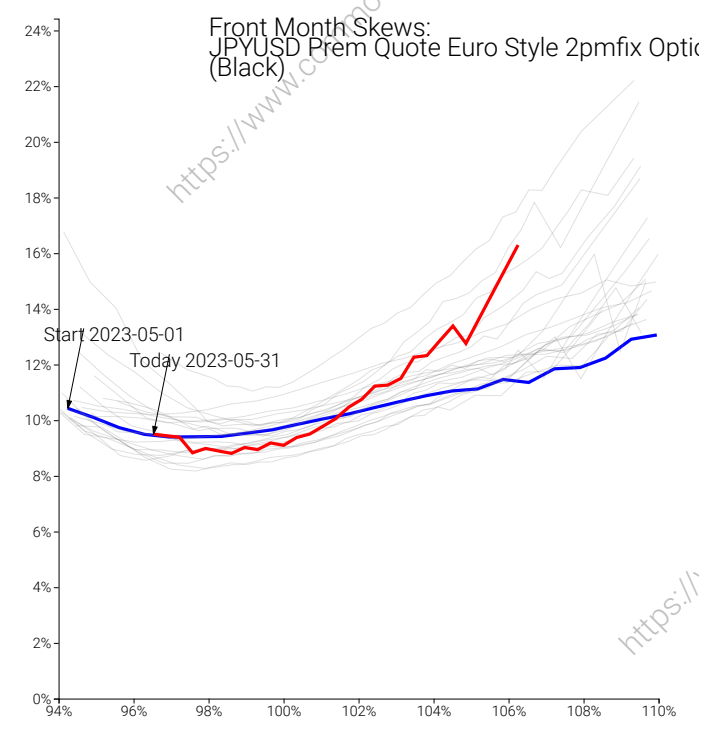
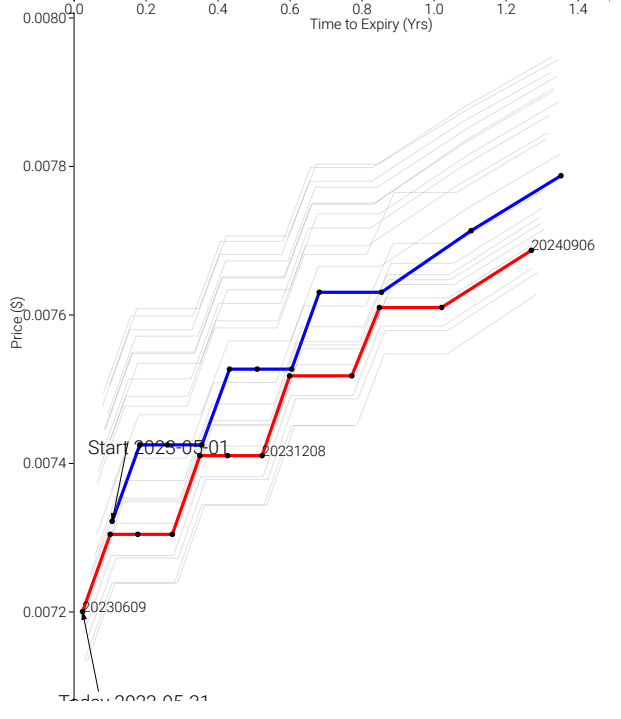
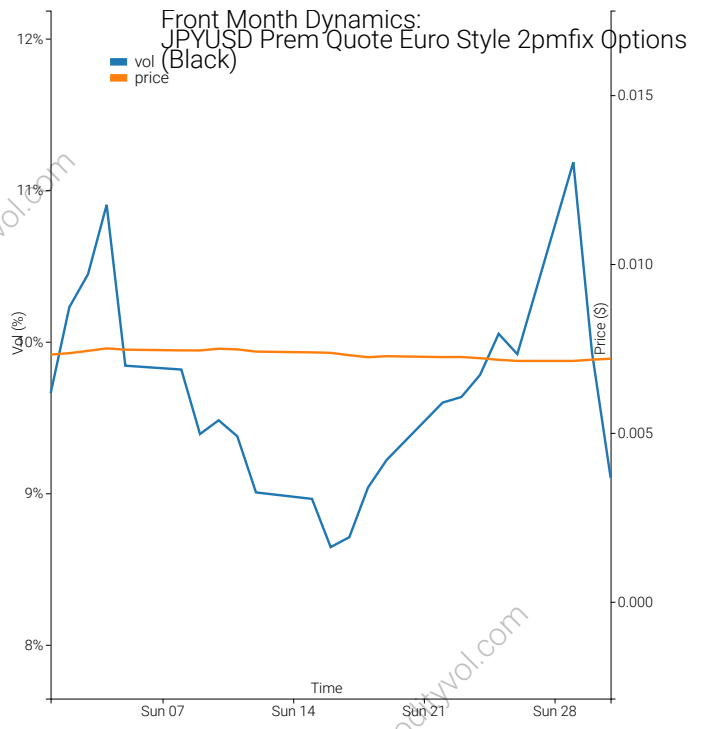
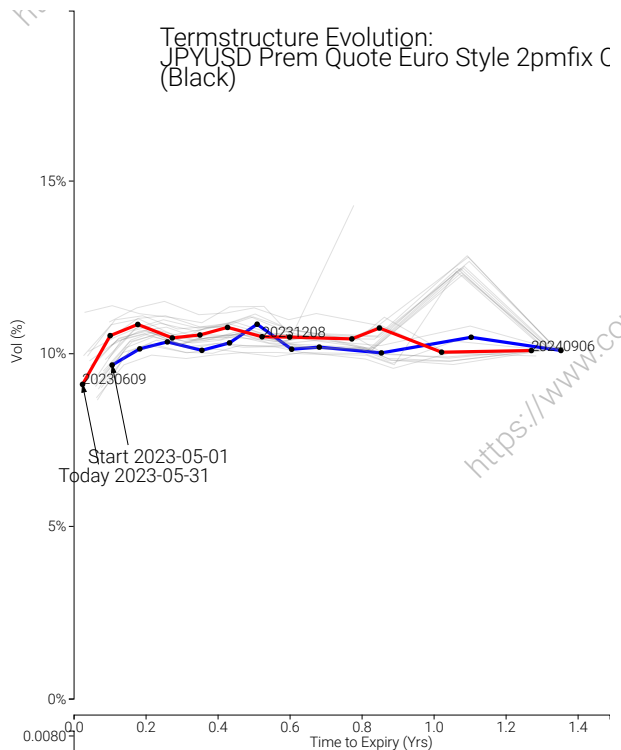


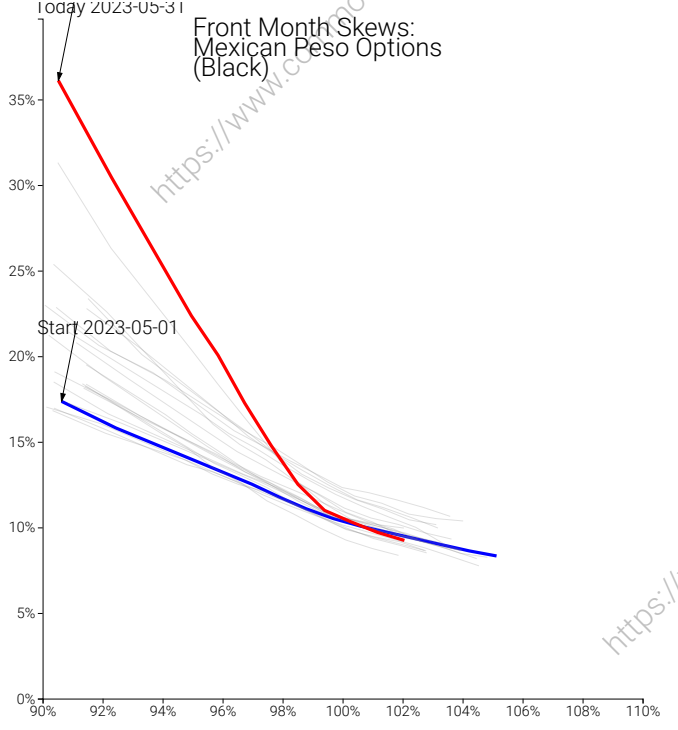
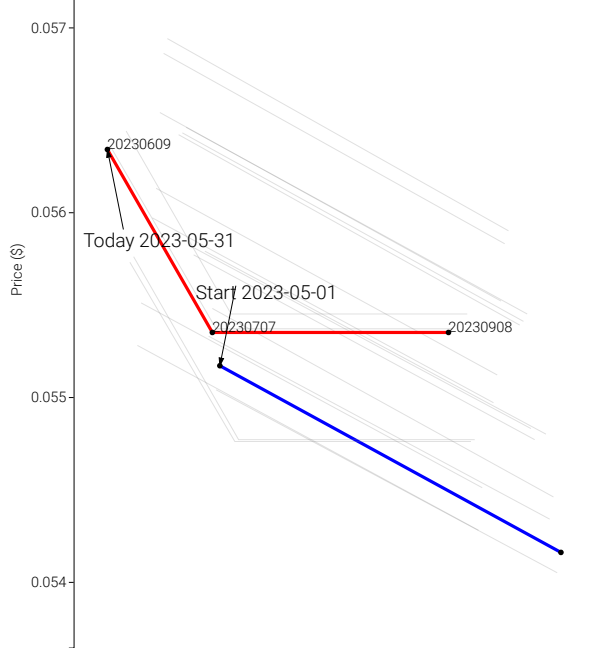
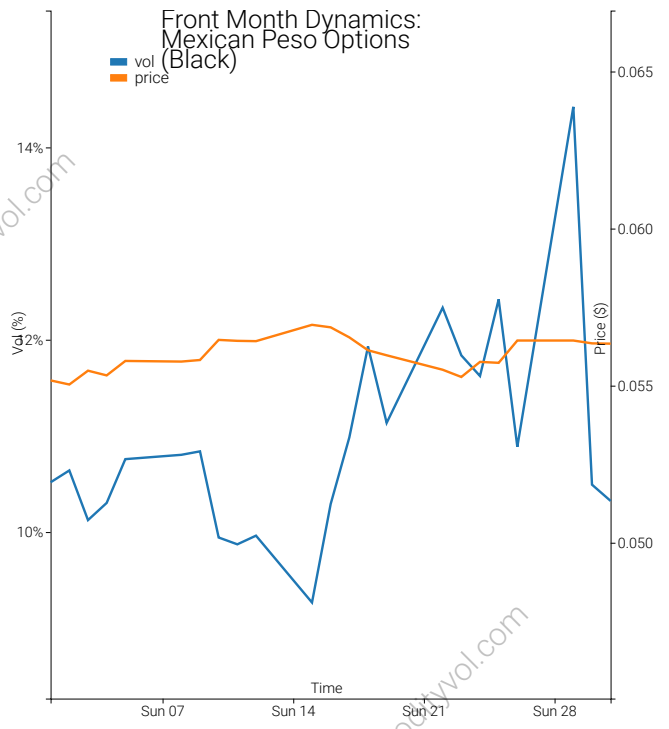
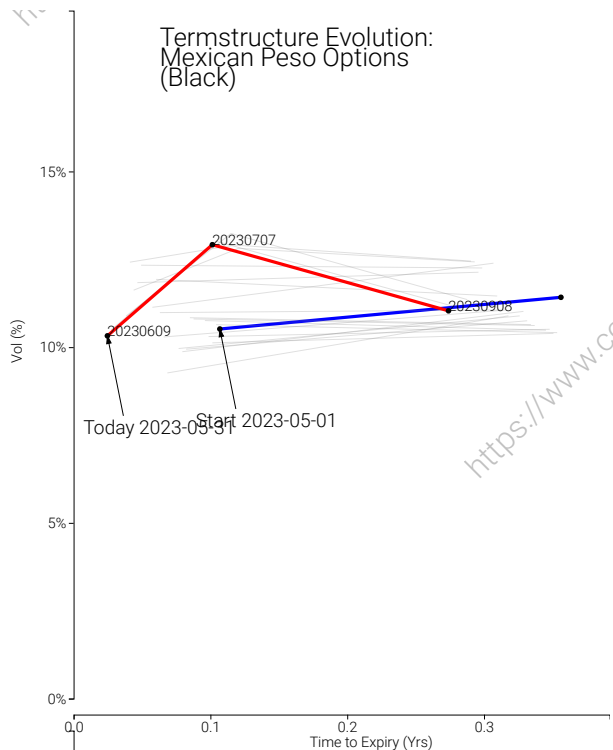
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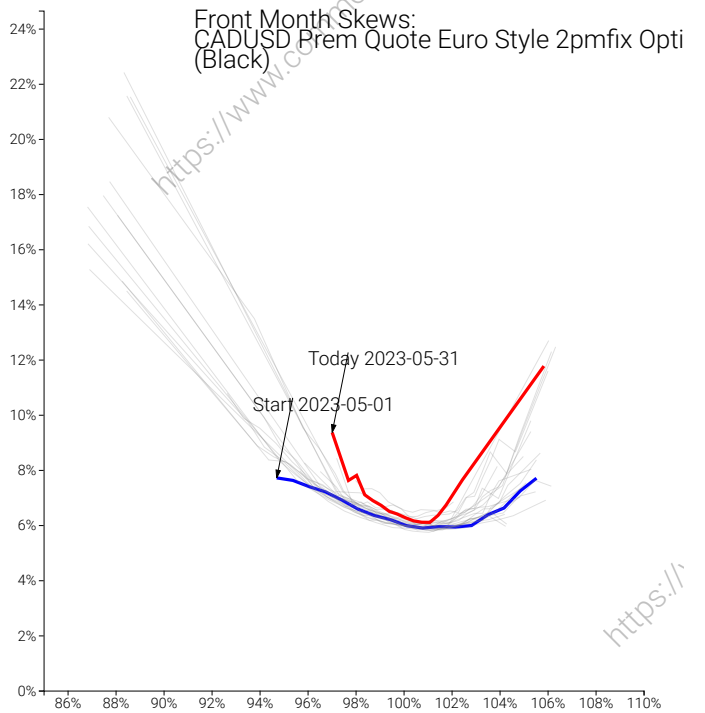
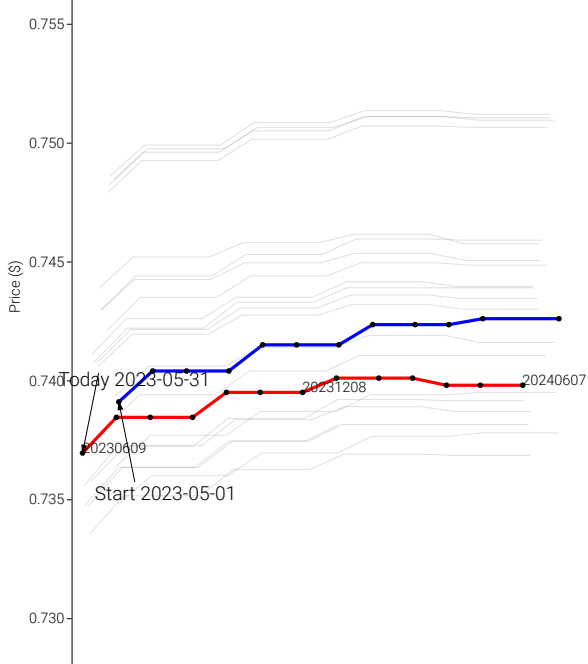
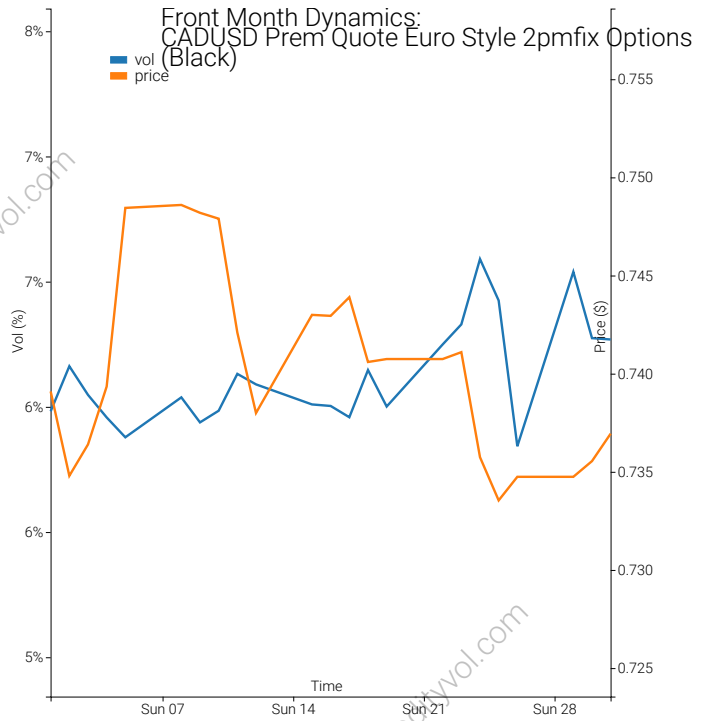
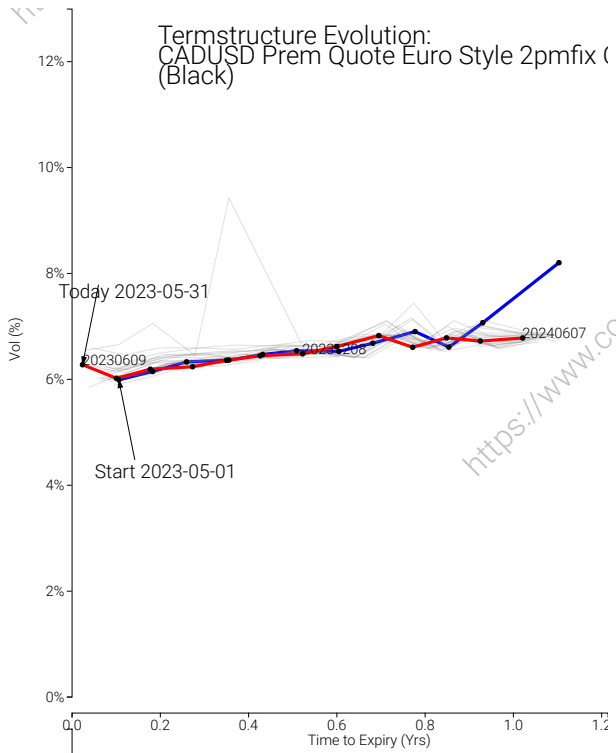


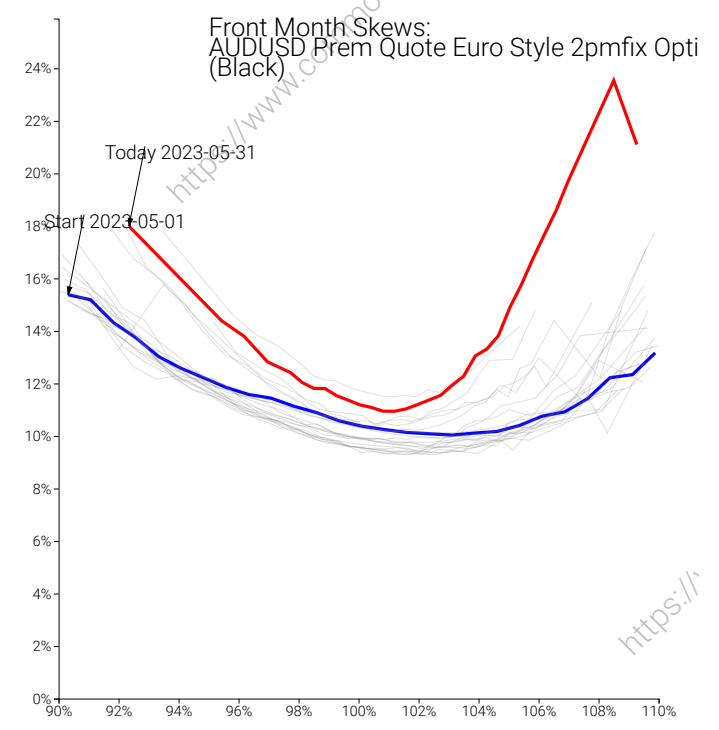
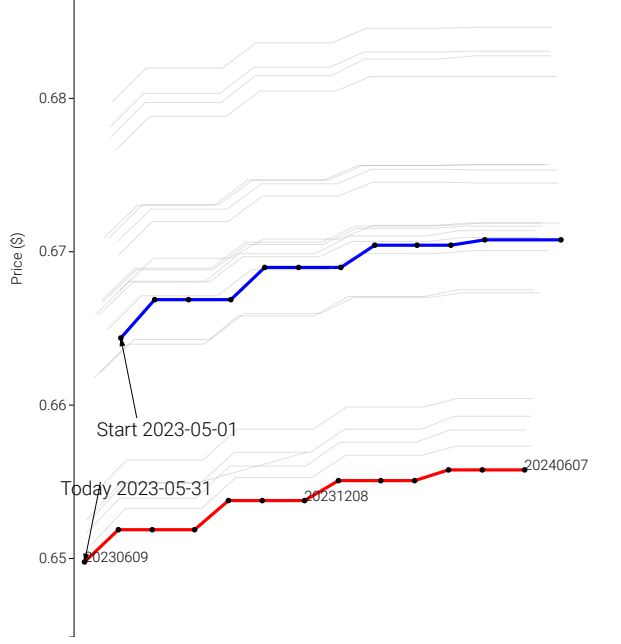
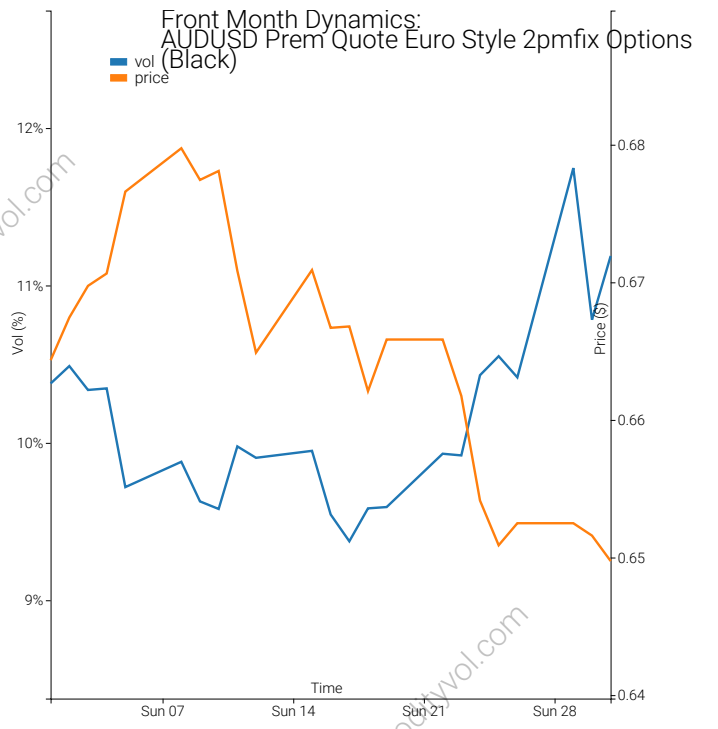
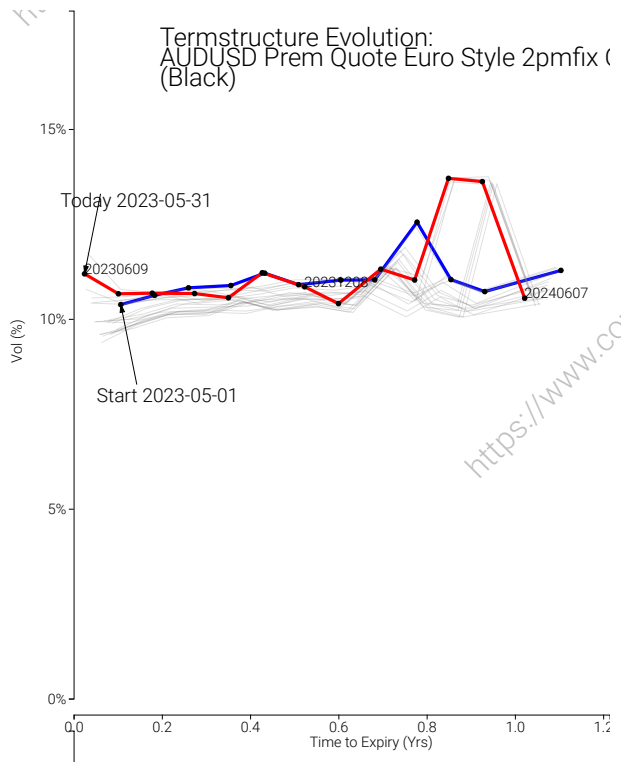


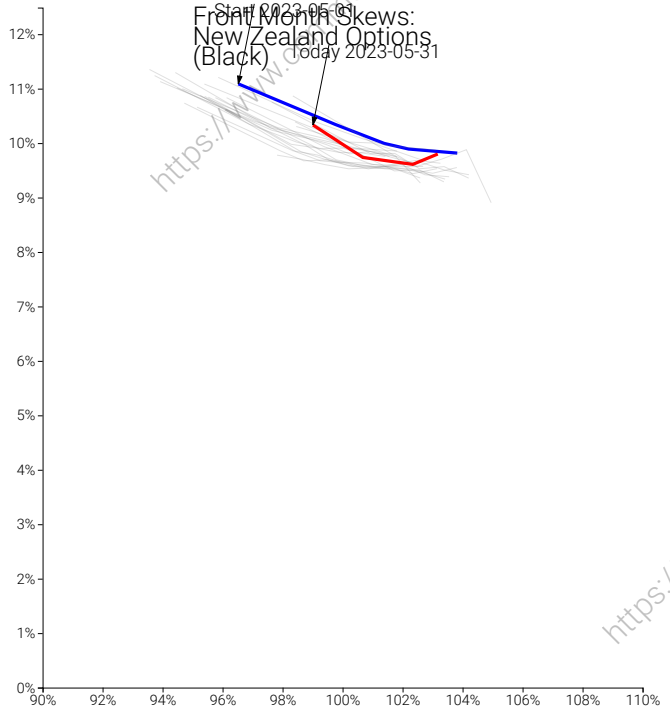
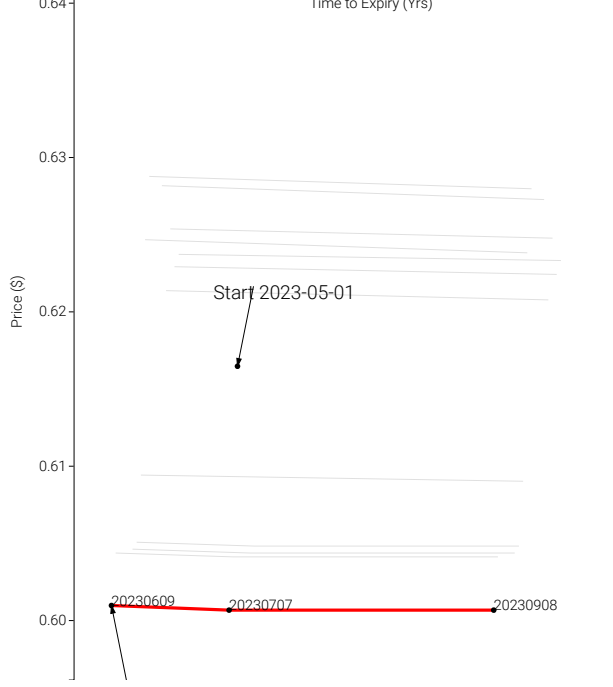
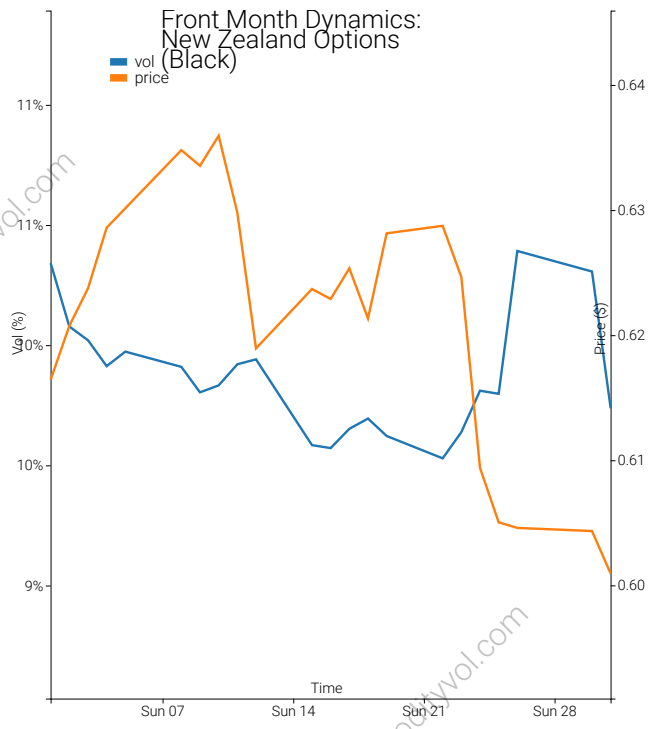
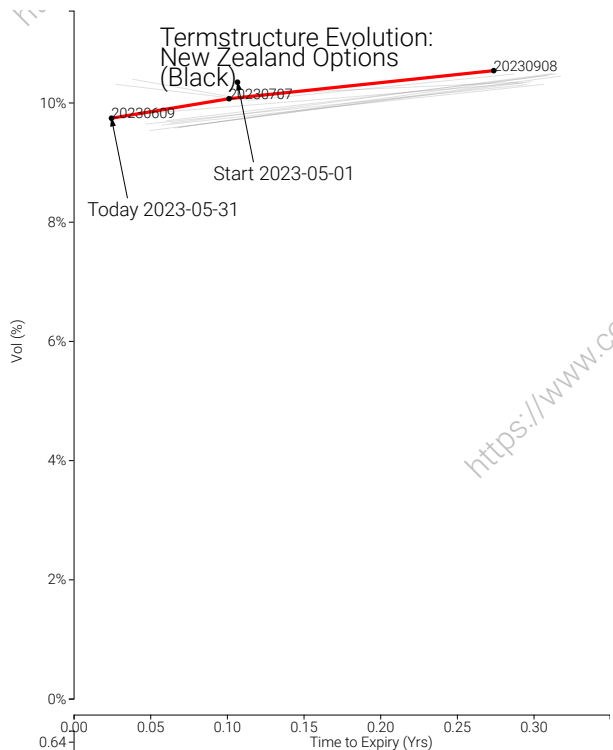


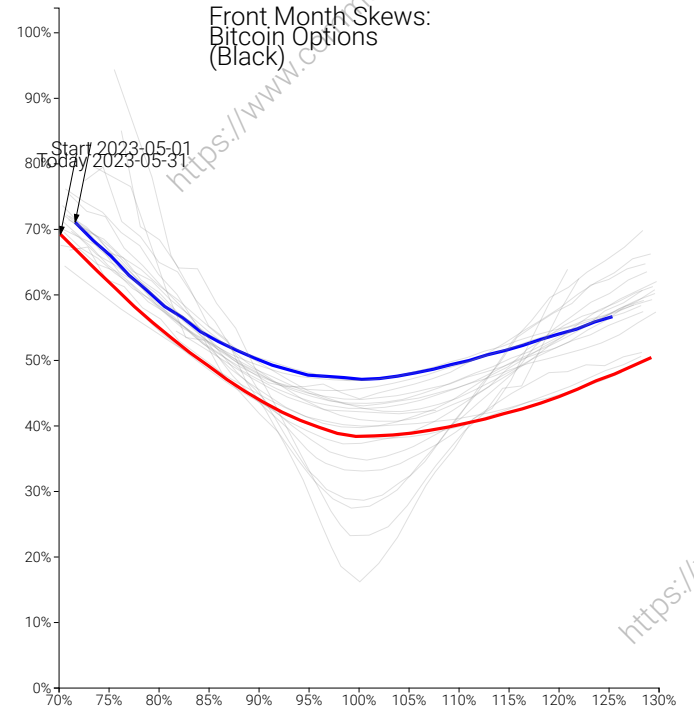
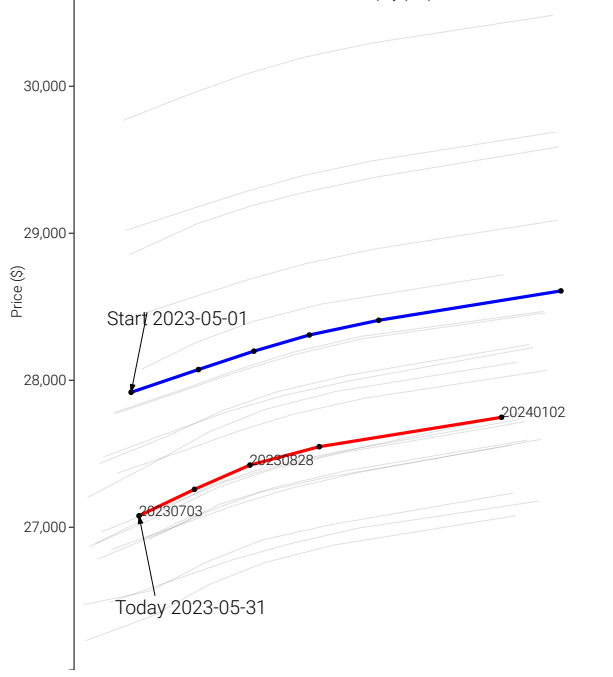
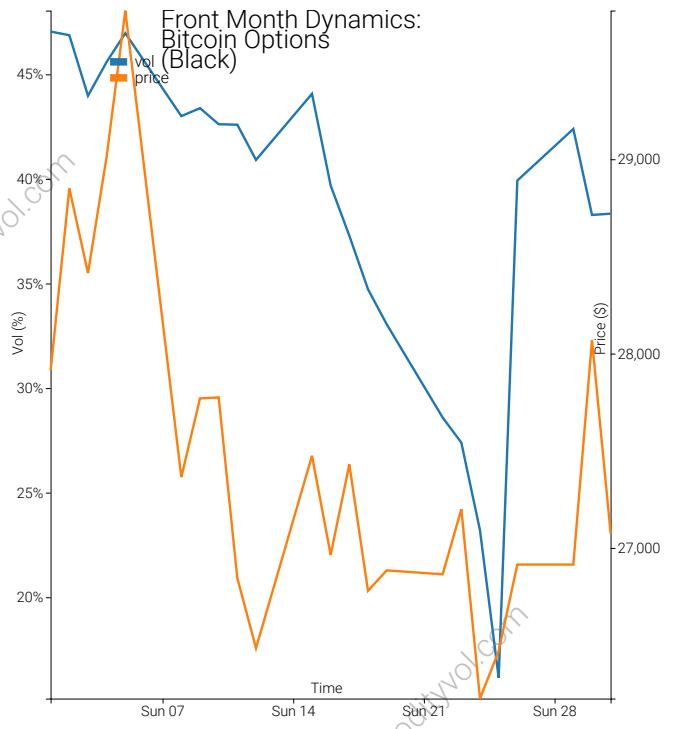
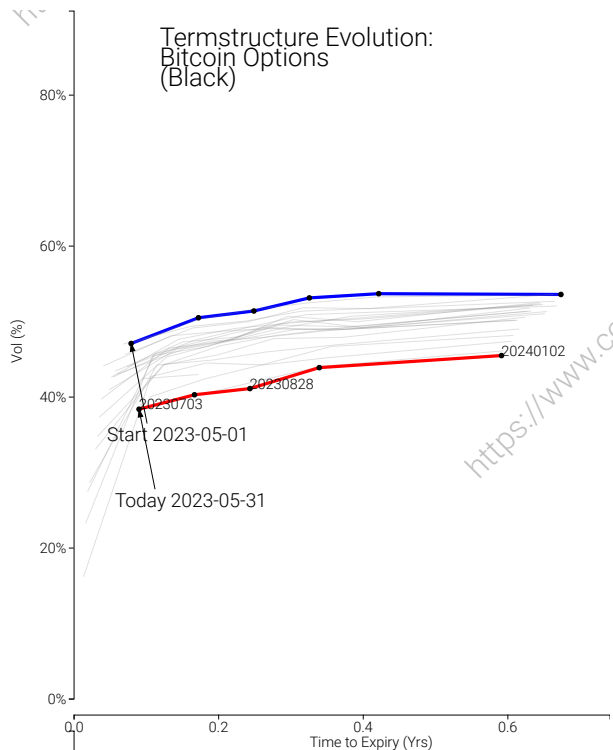


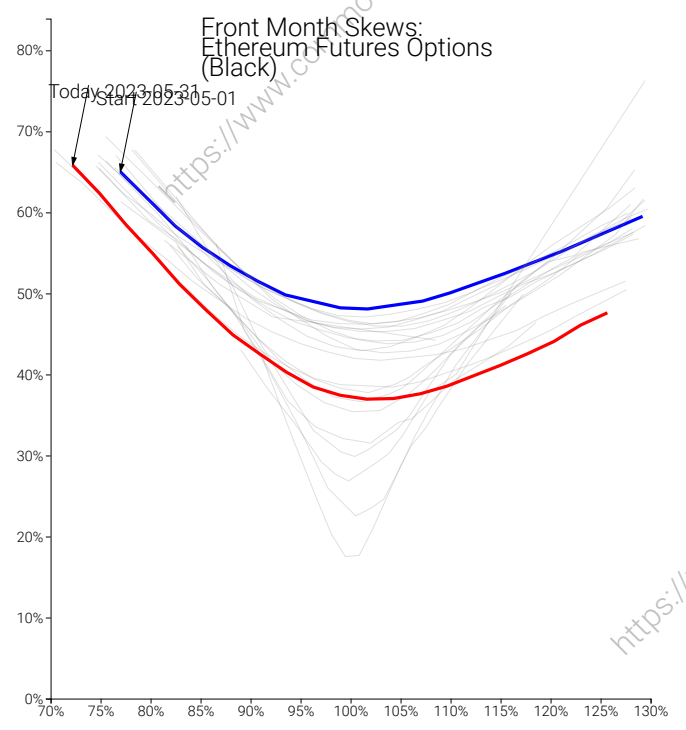
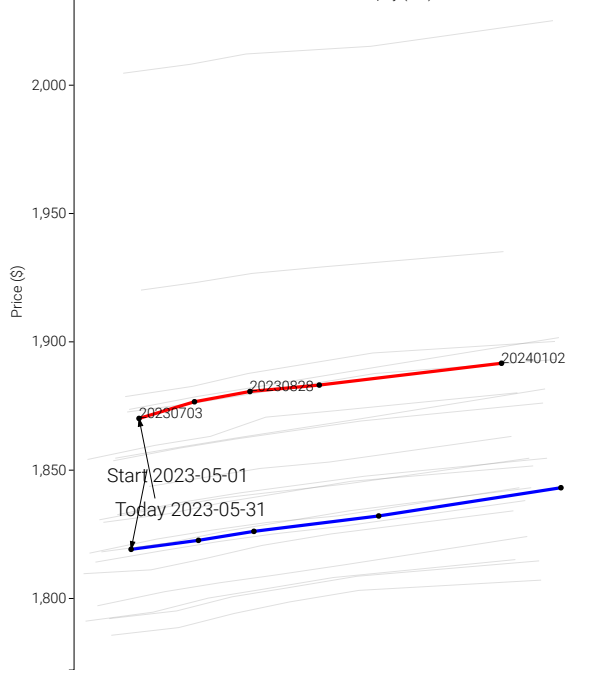
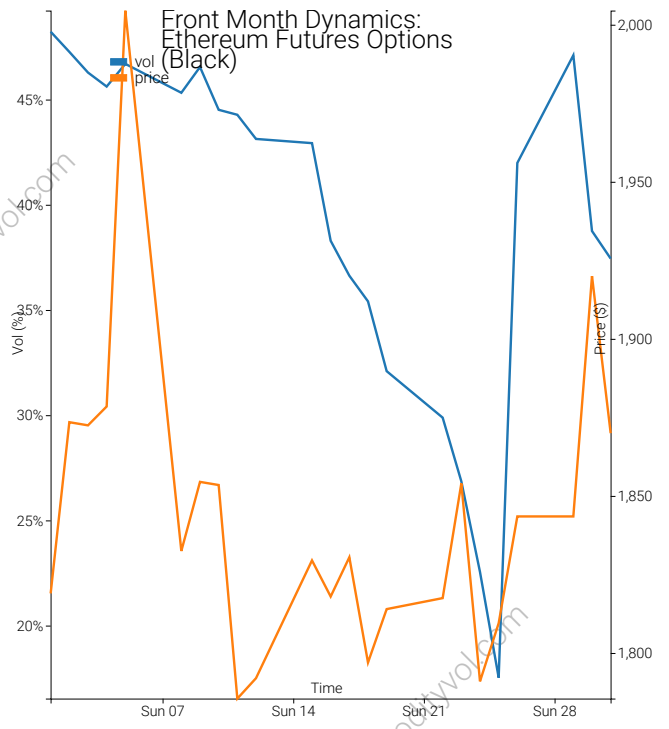
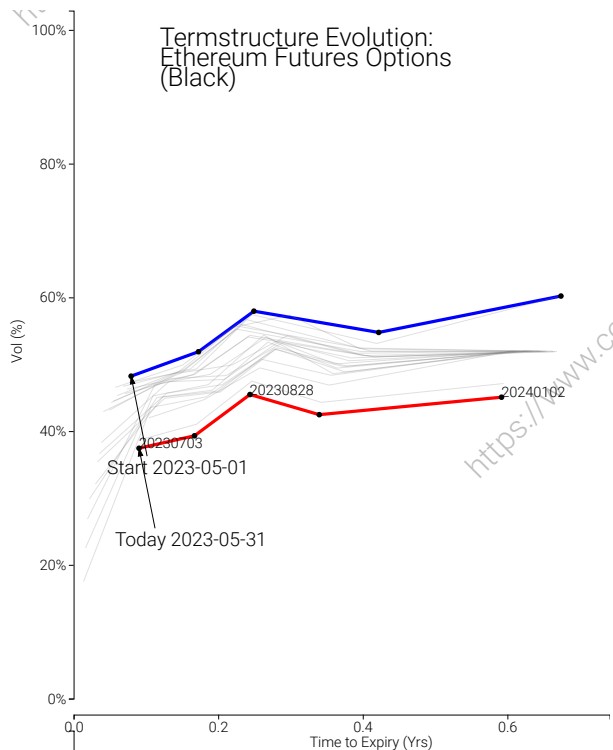




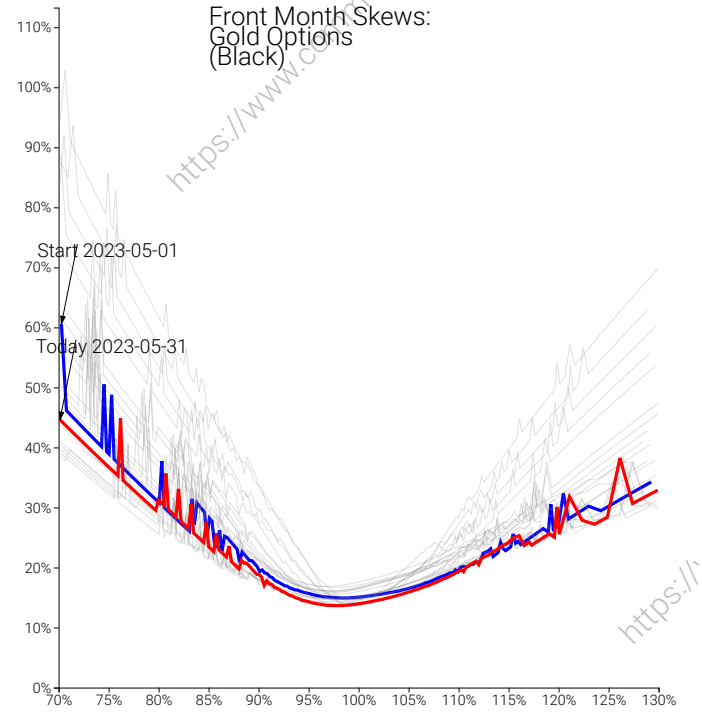
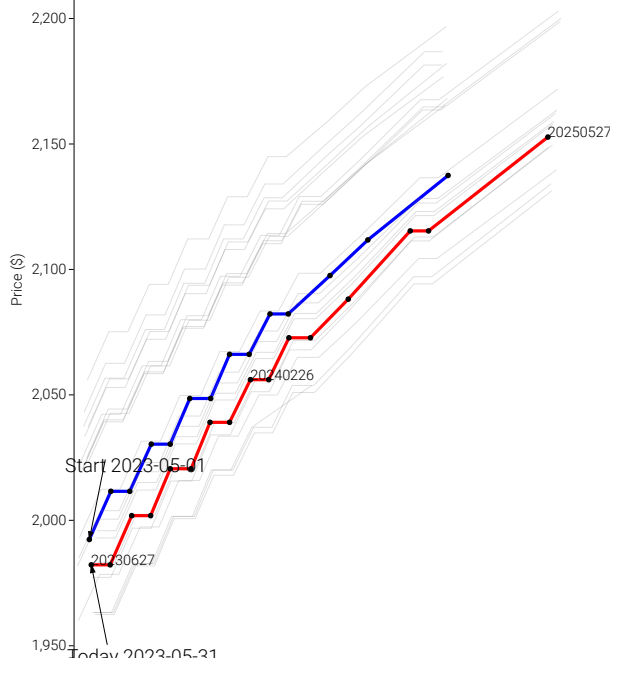
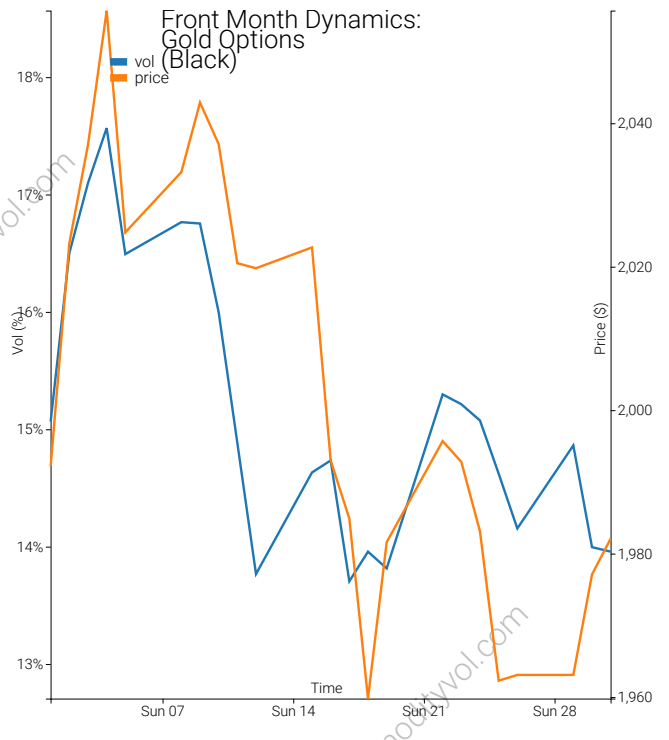
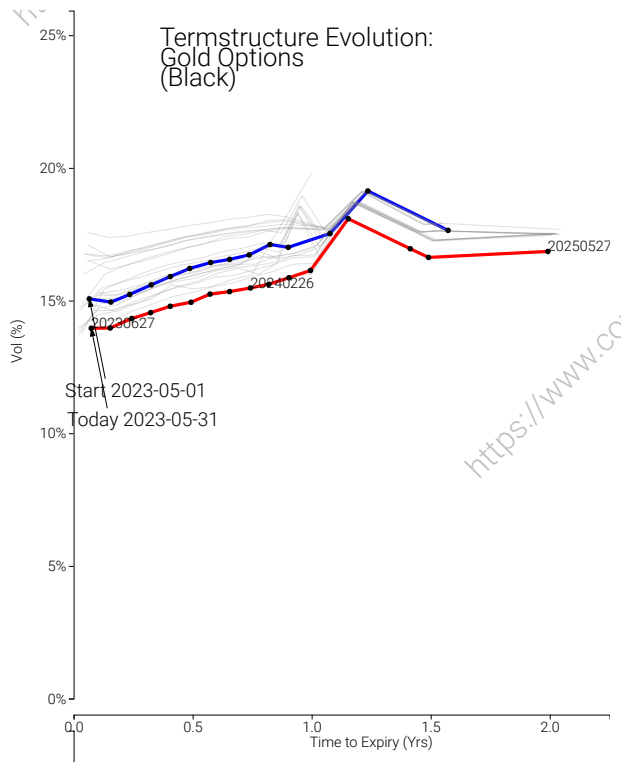


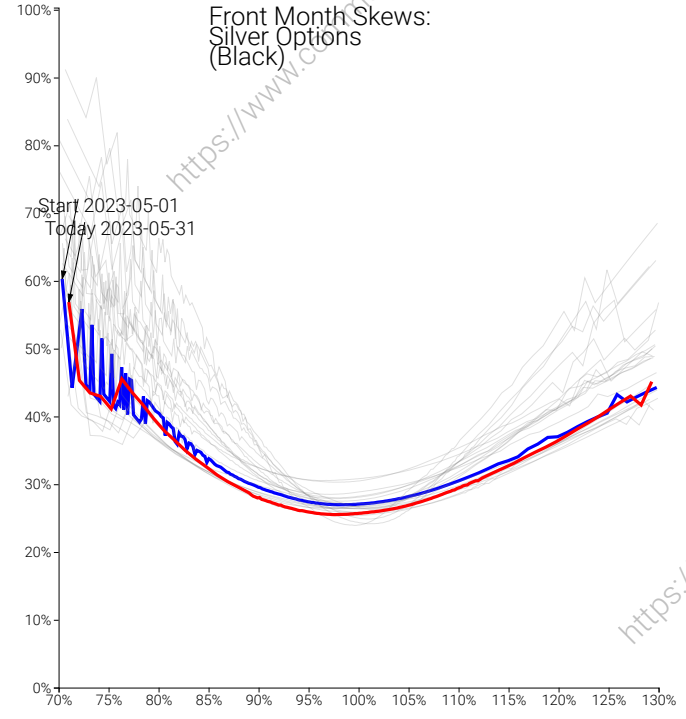
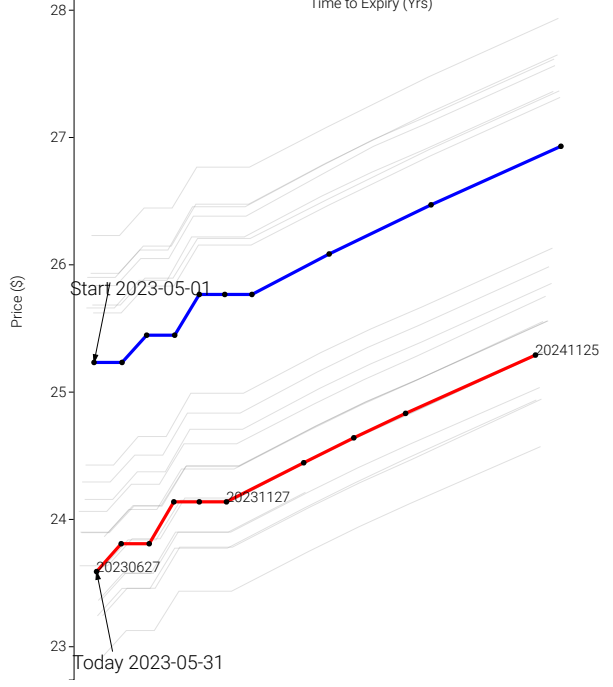
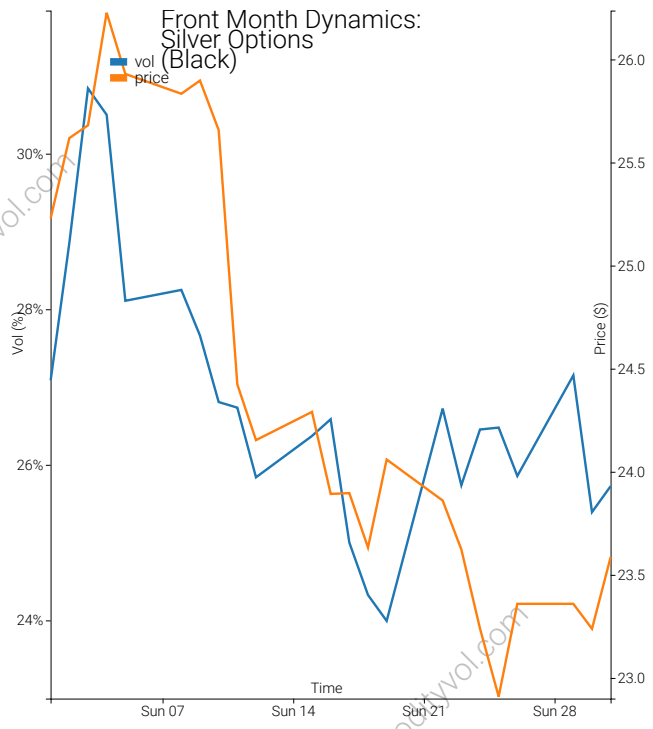
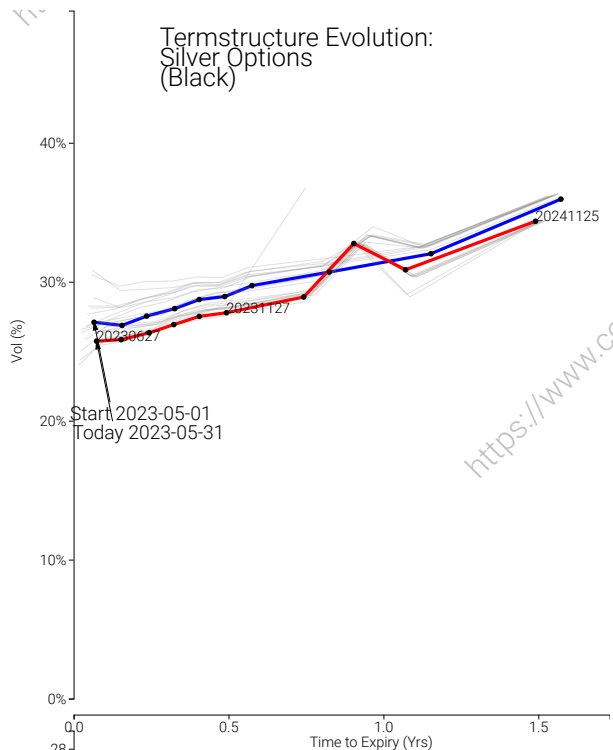


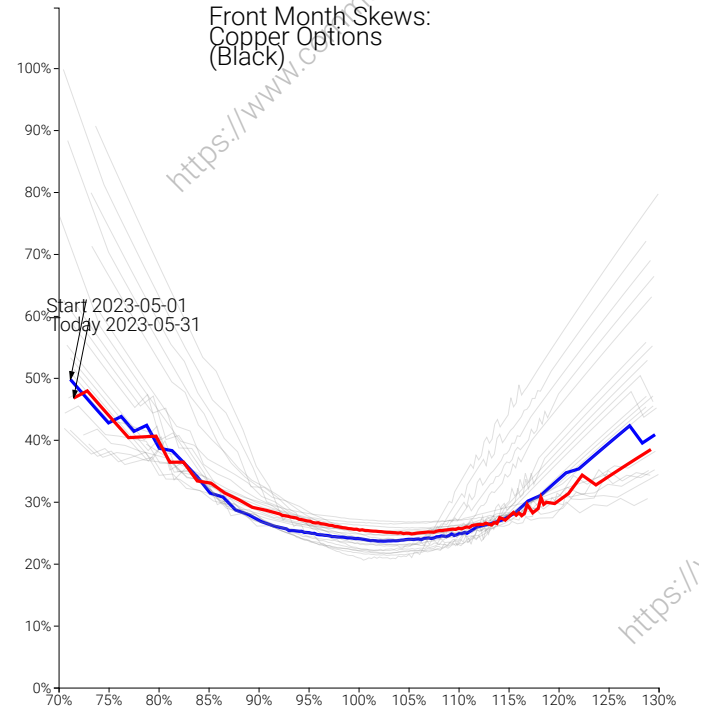
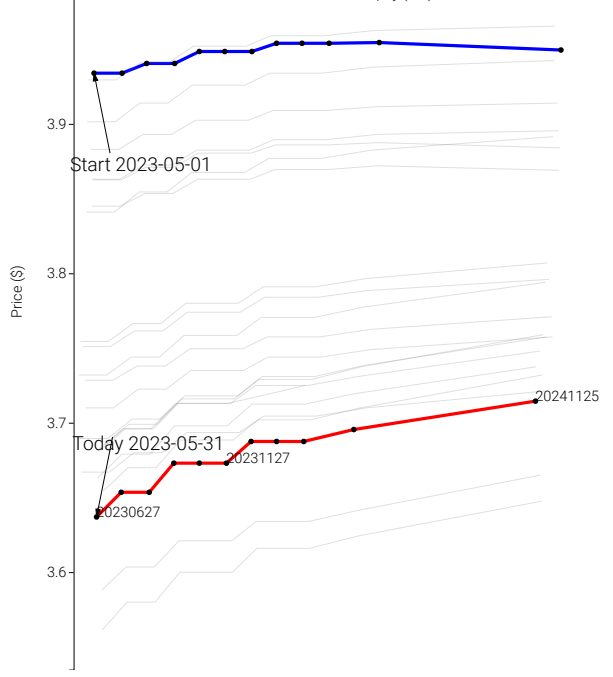
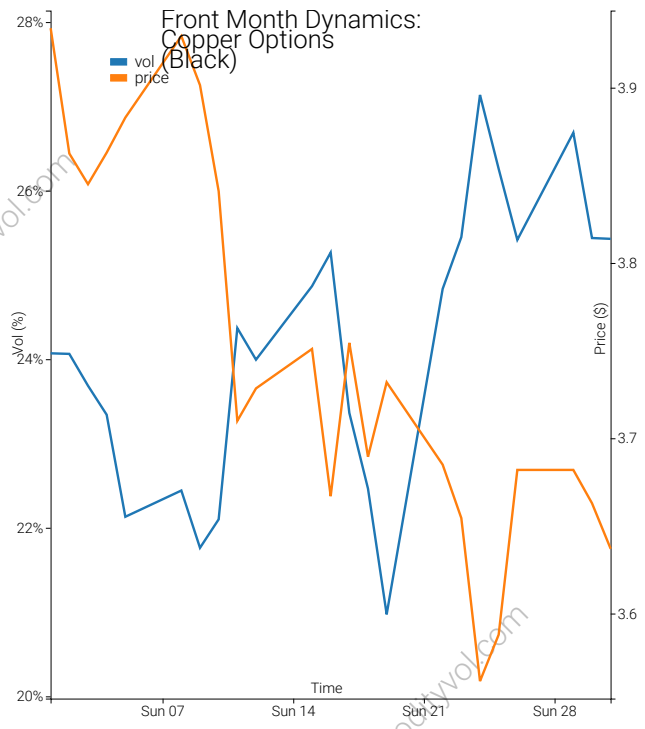
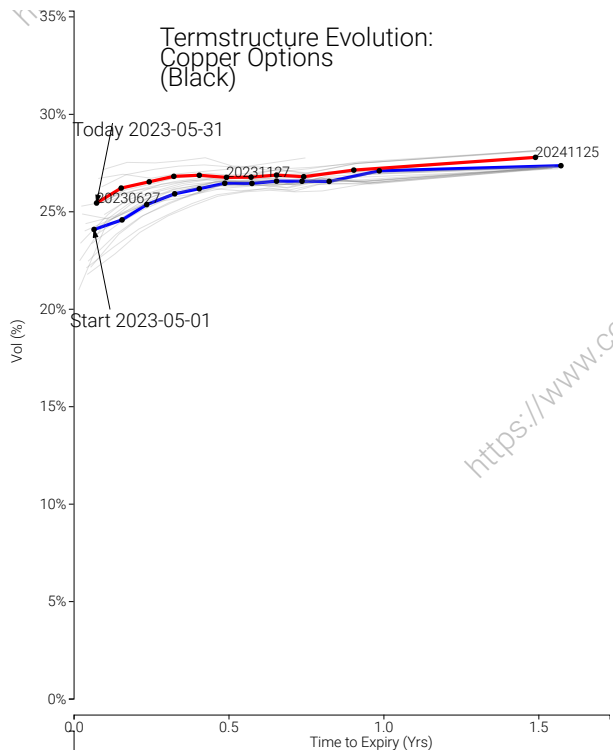


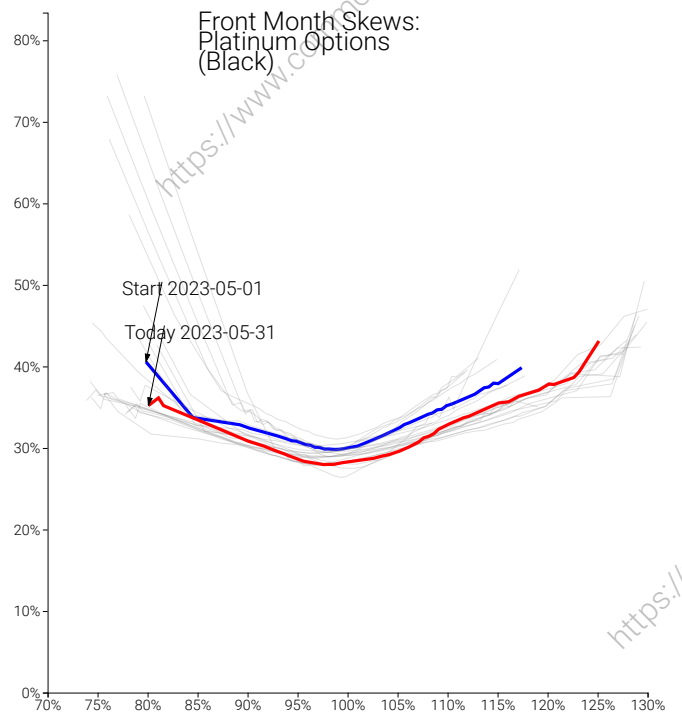
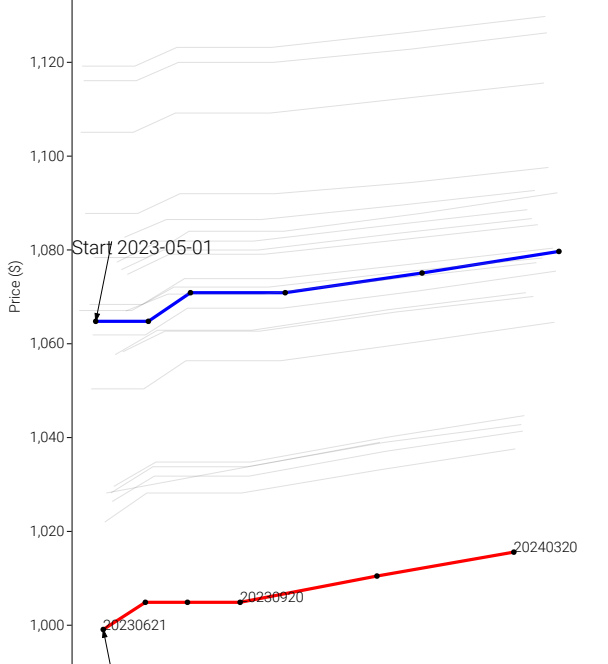
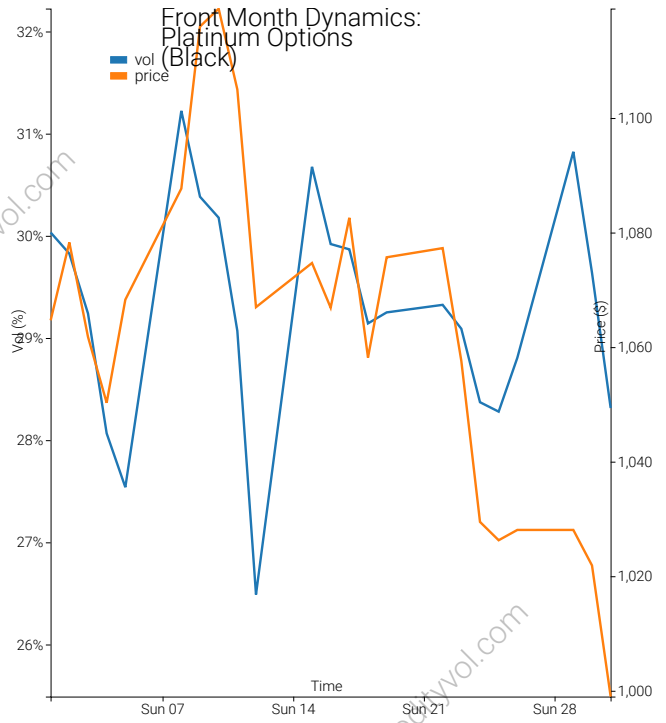
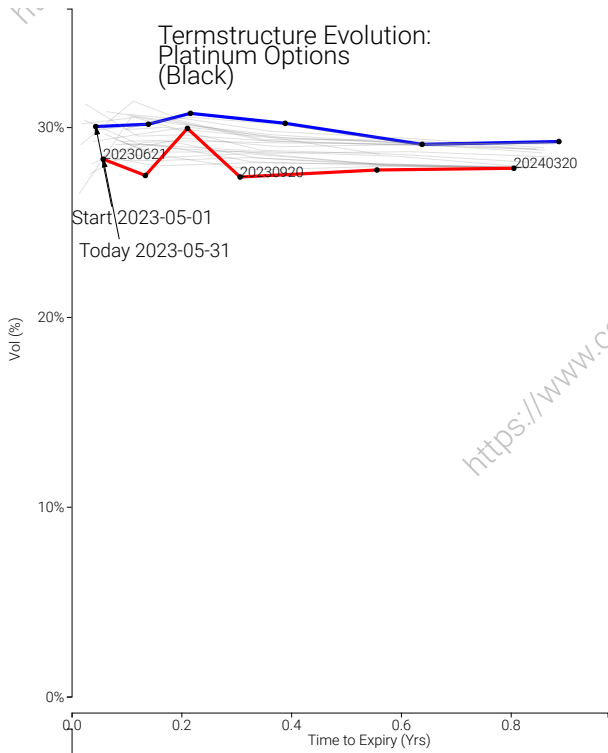


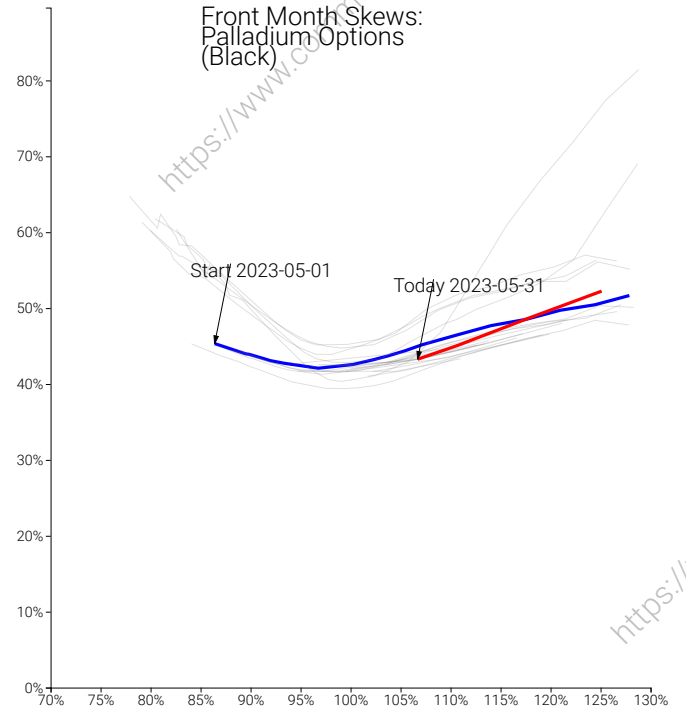
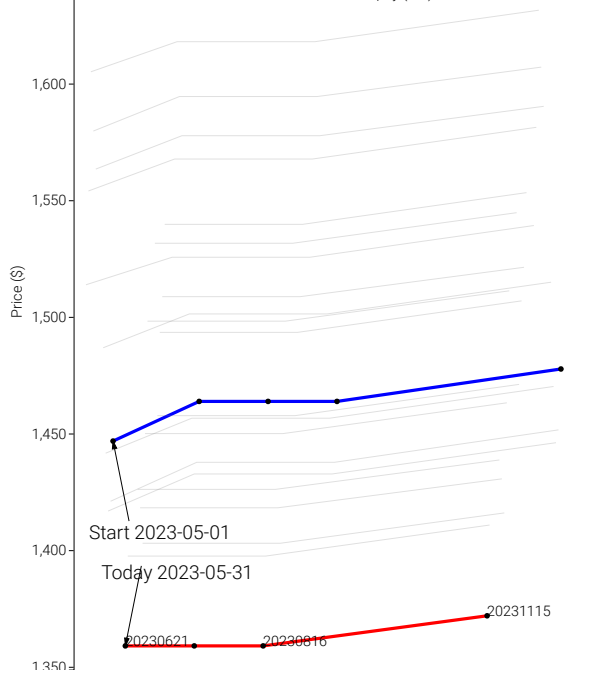
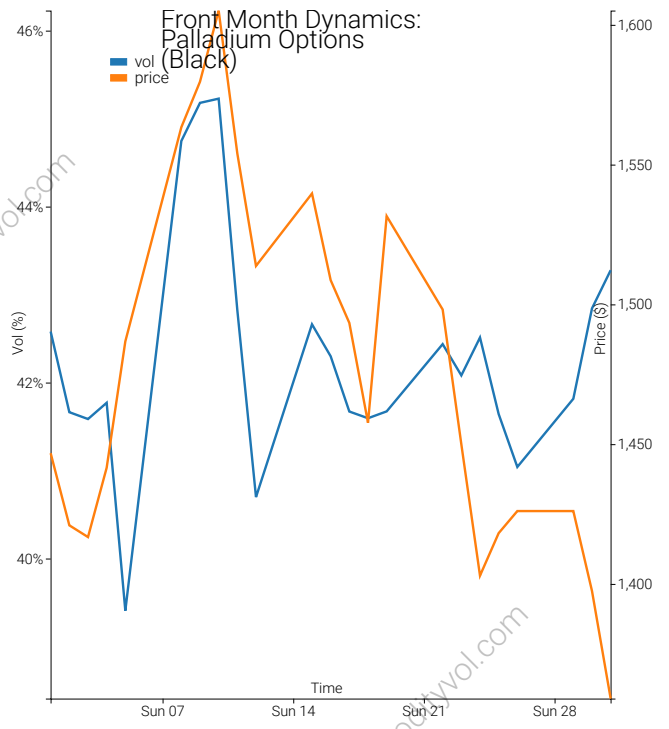
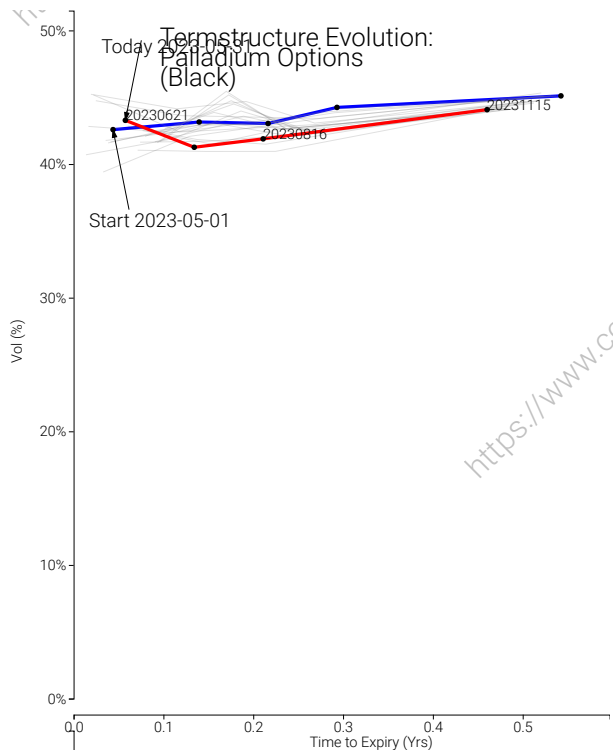
Metals



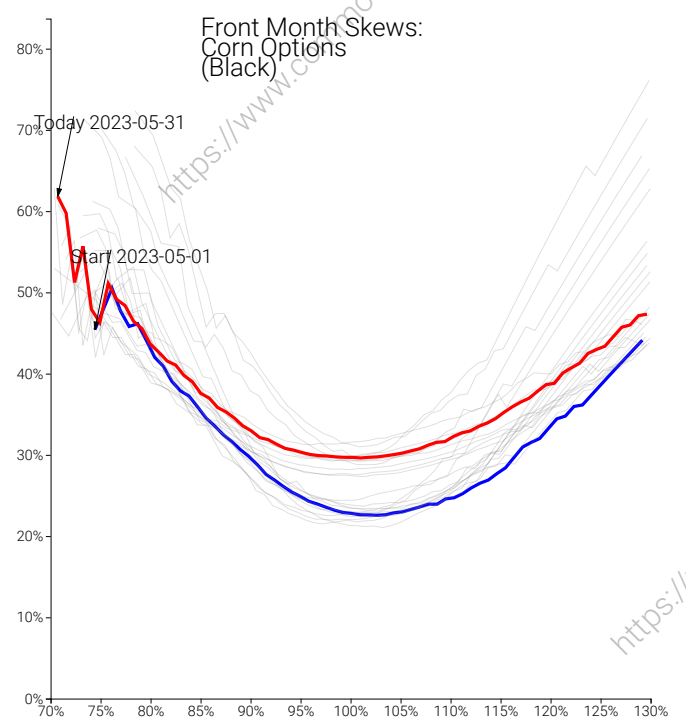
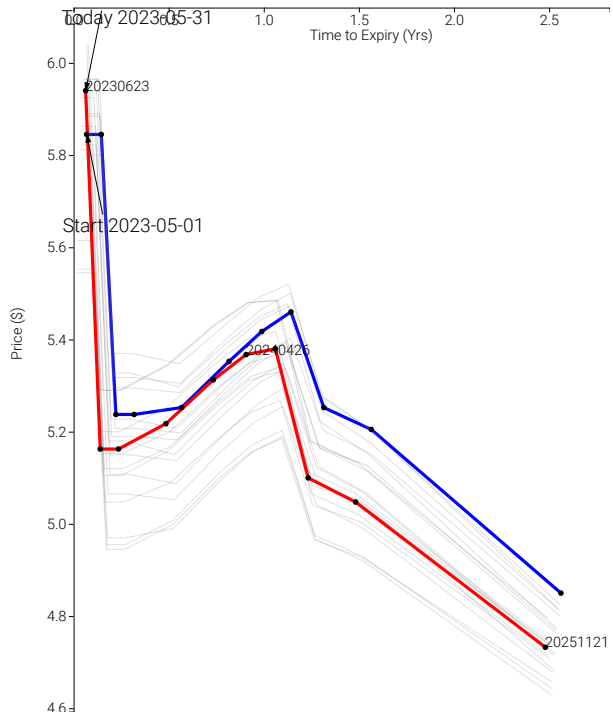
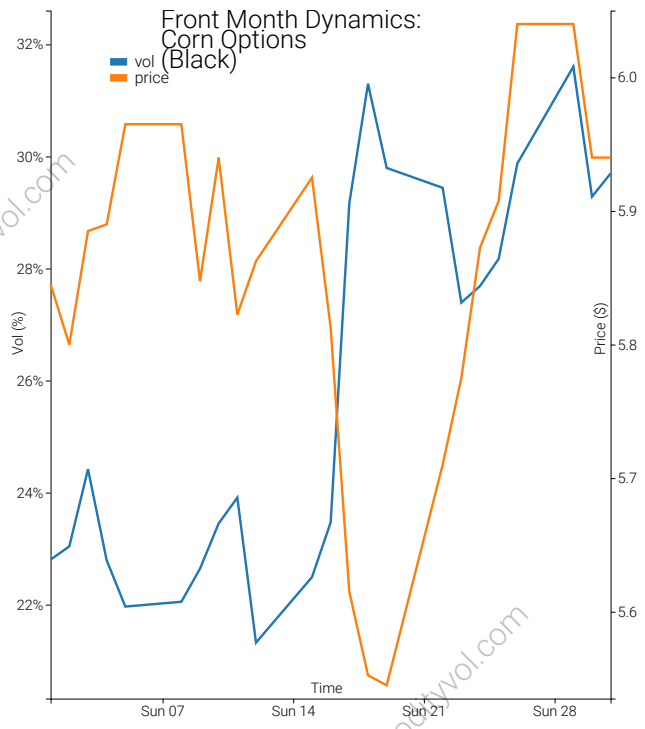
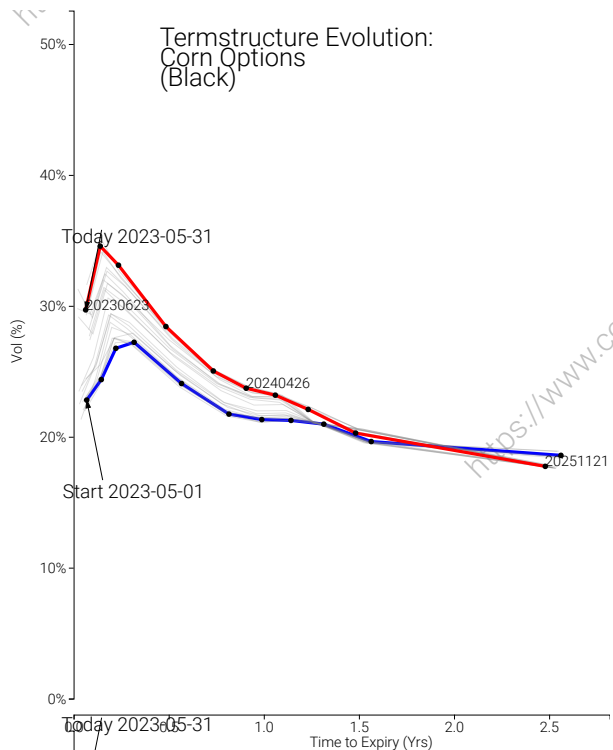


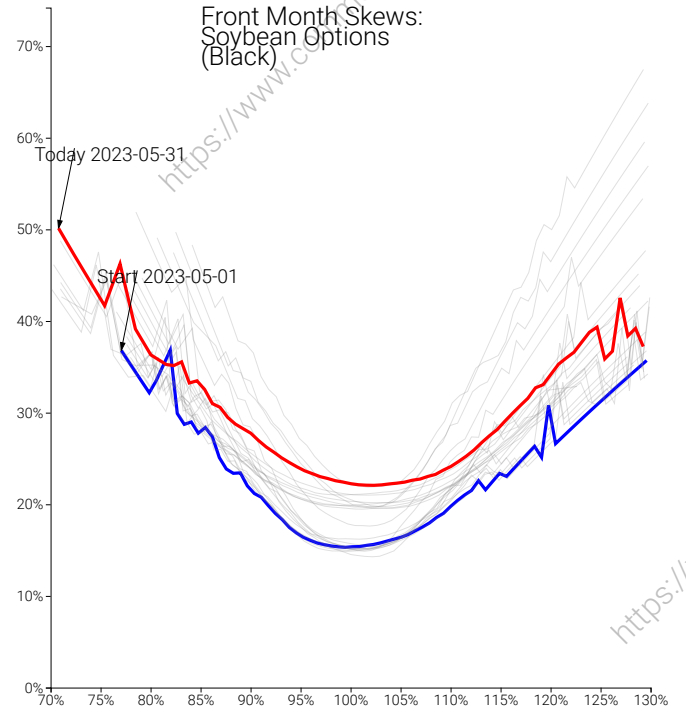
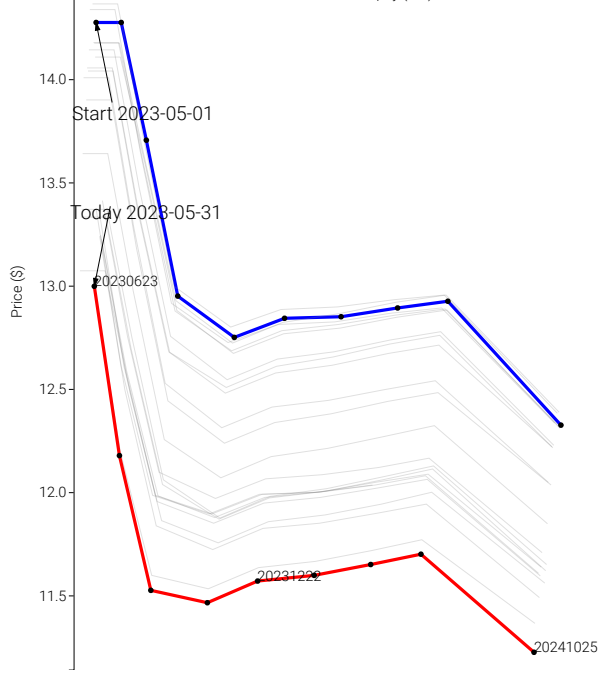
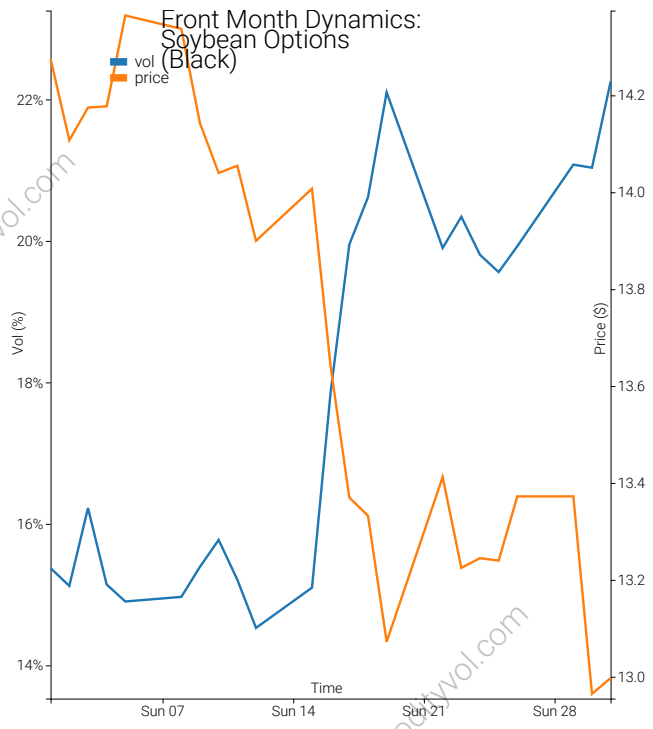
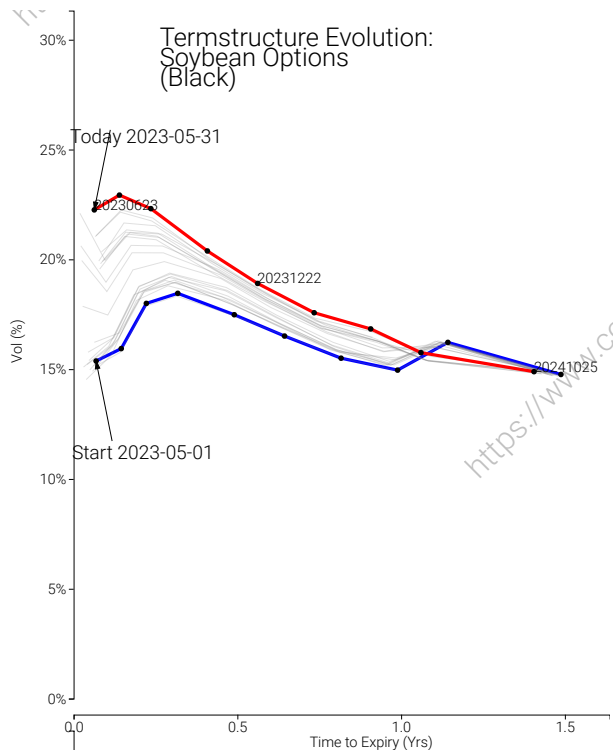


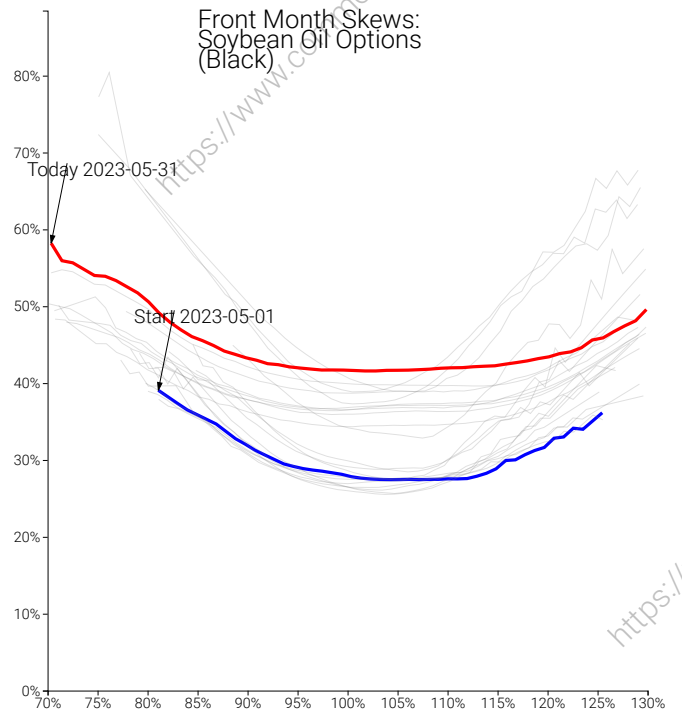
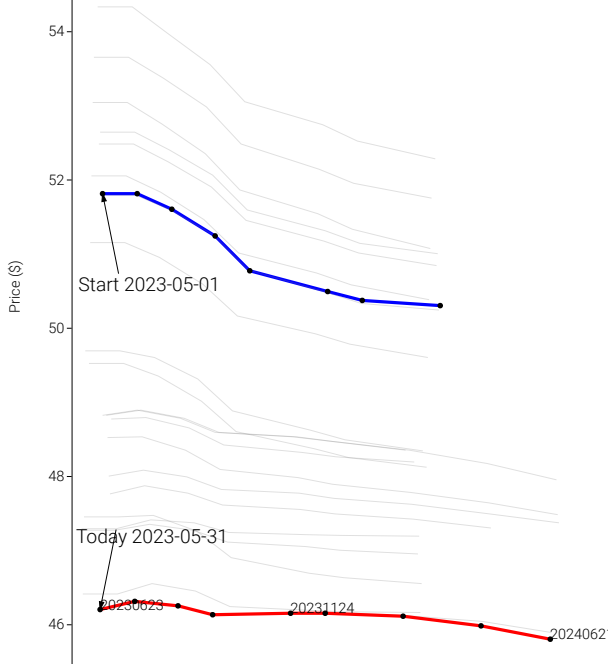
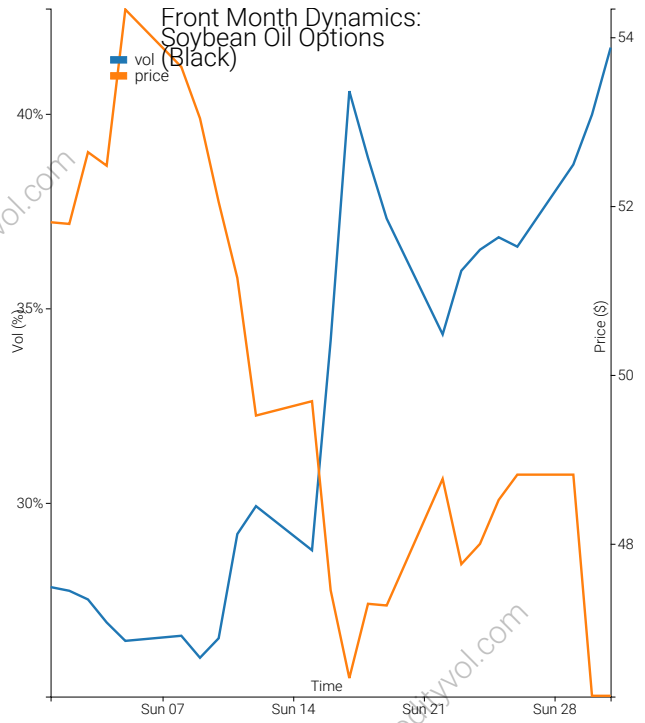
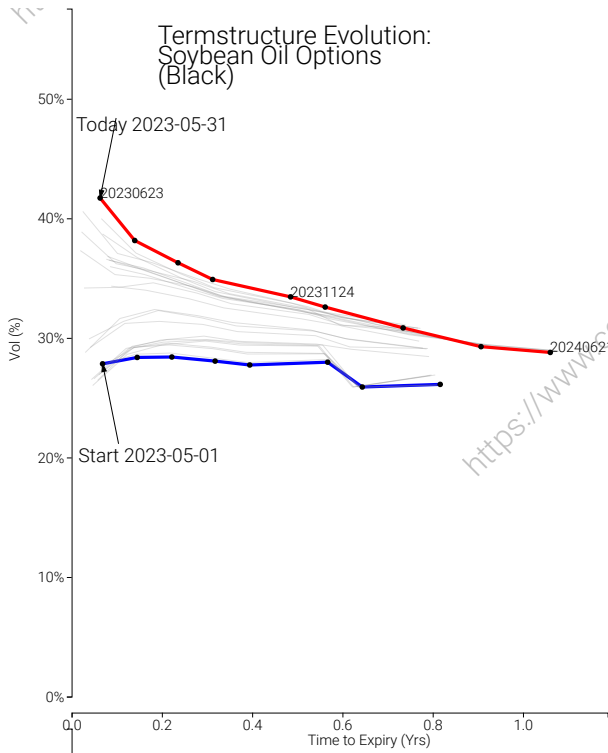


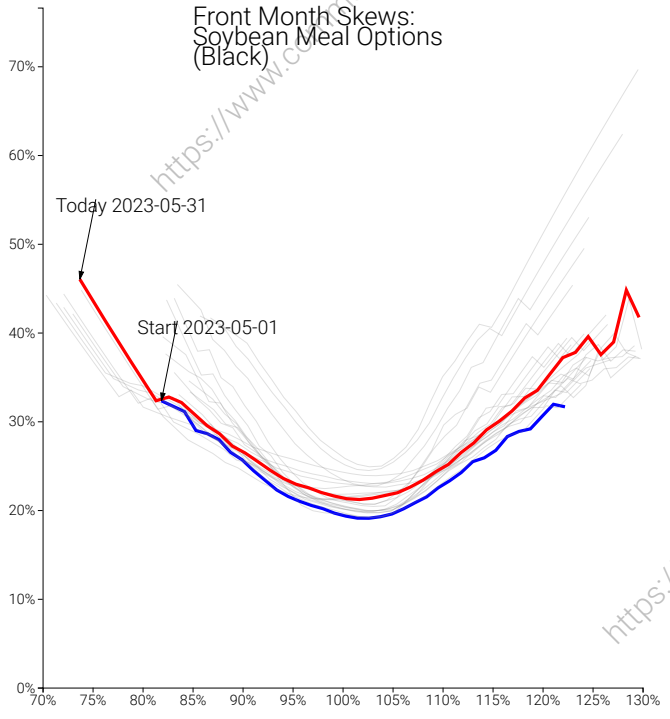
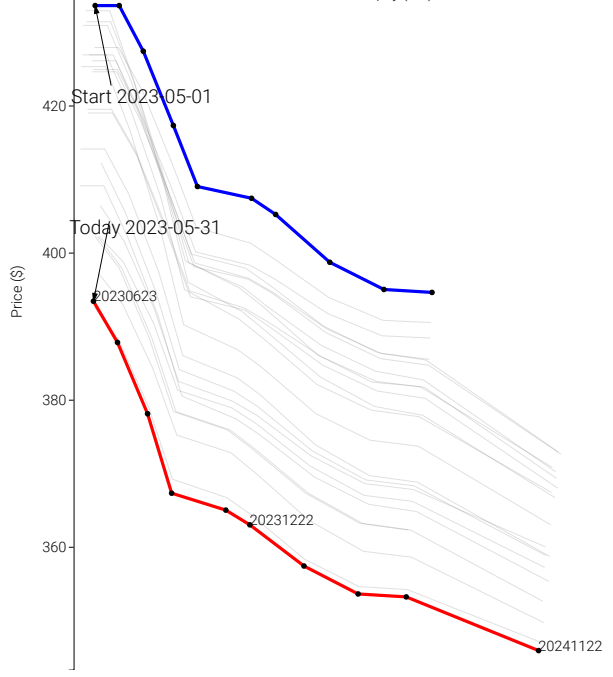
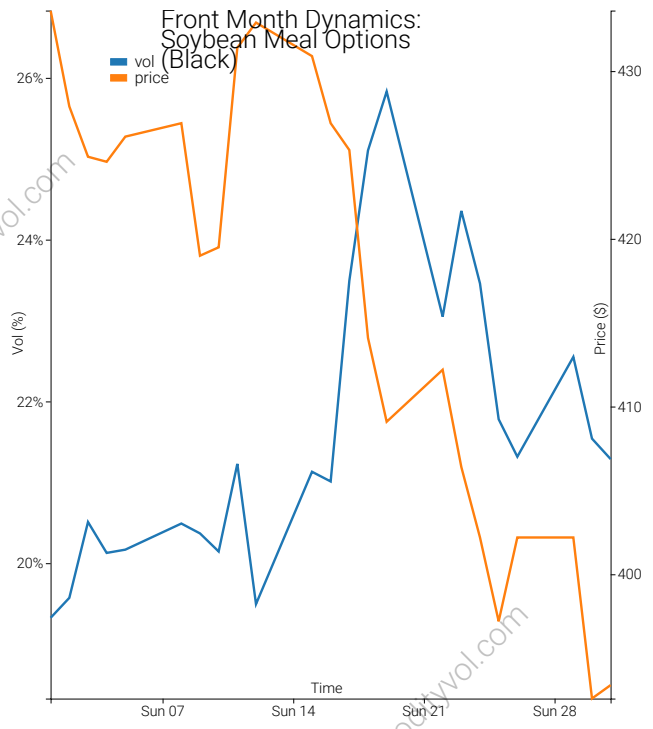
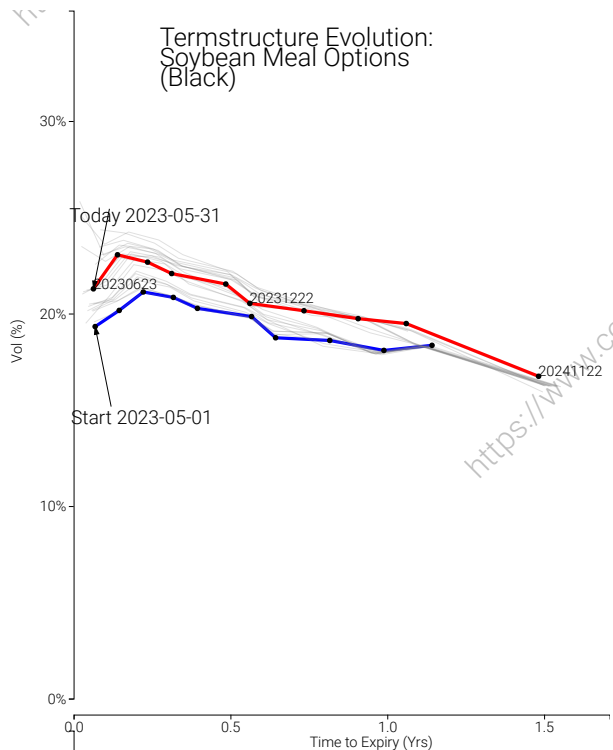


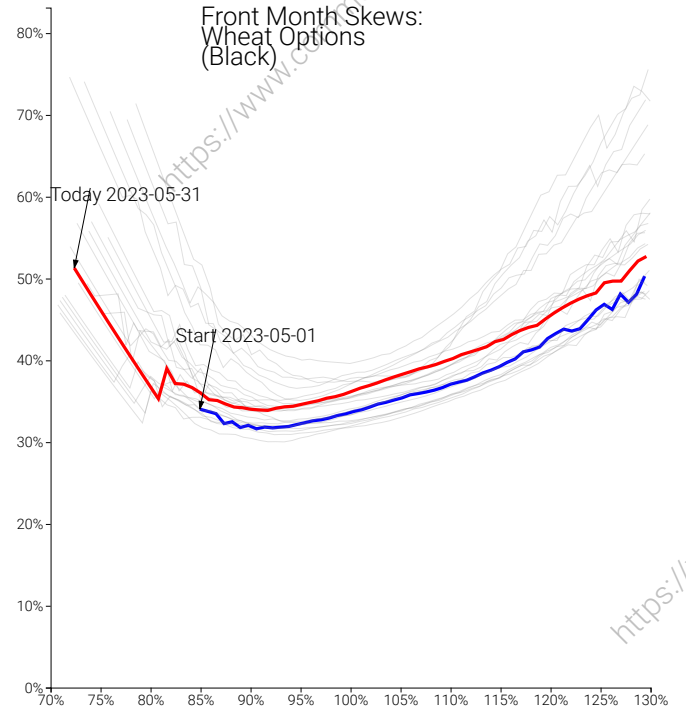
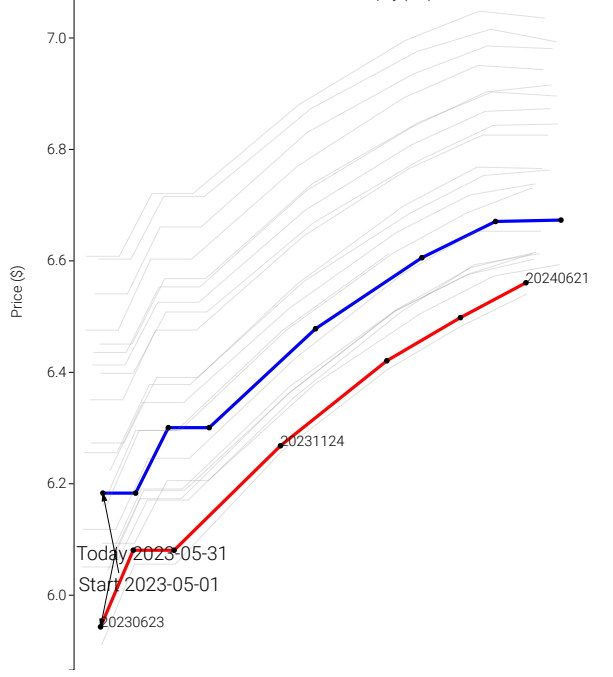
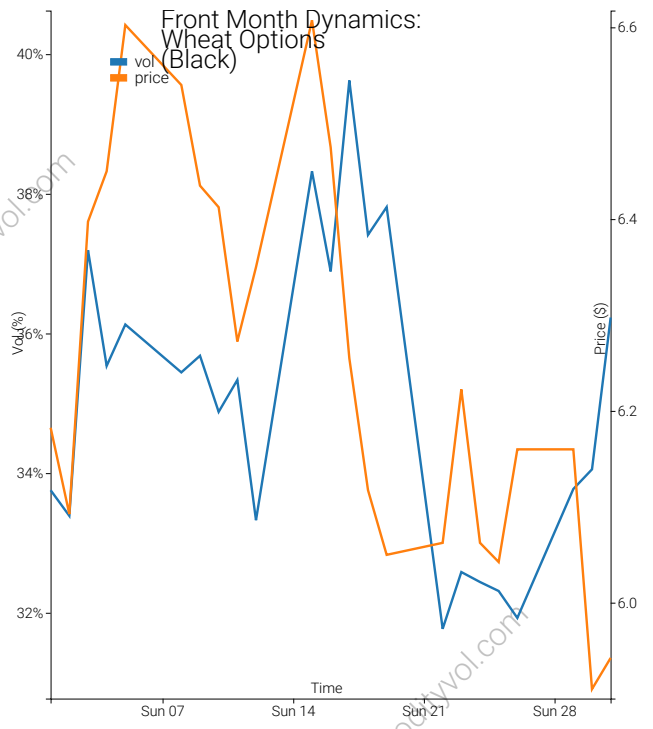
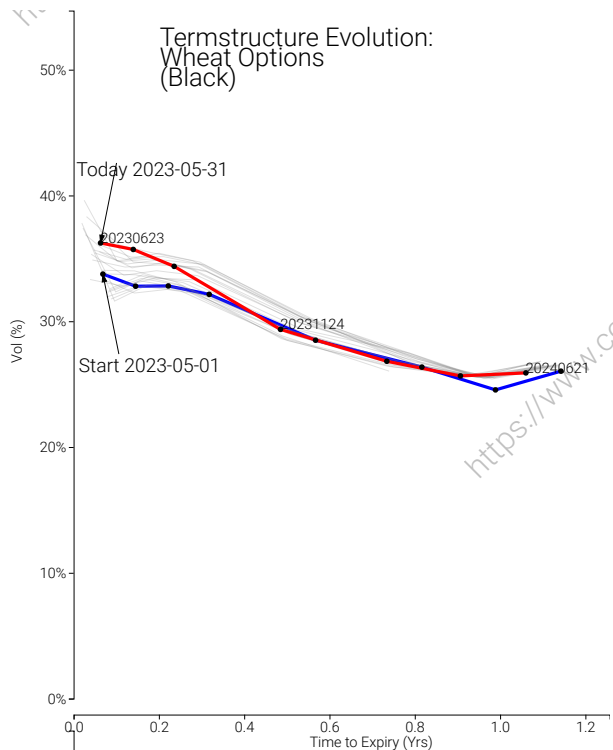
Ags: Grains, Oilseeds, and so forth

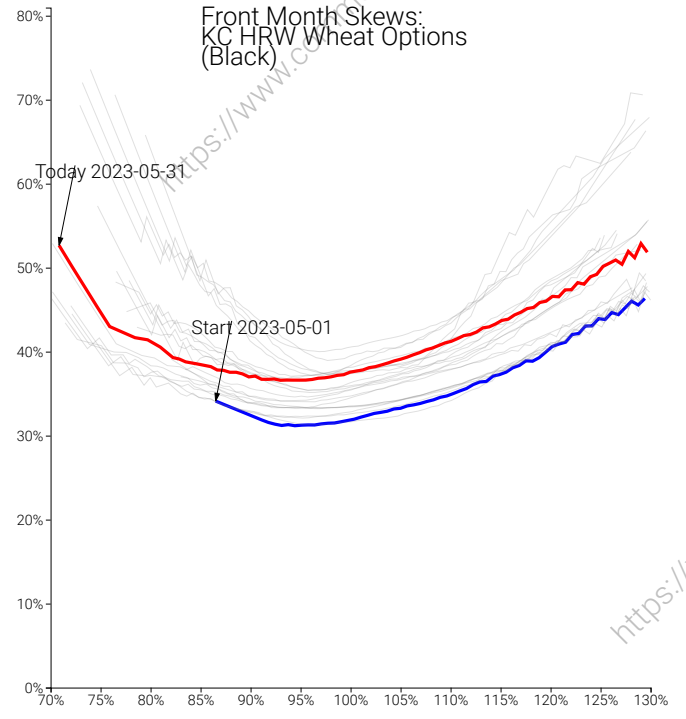
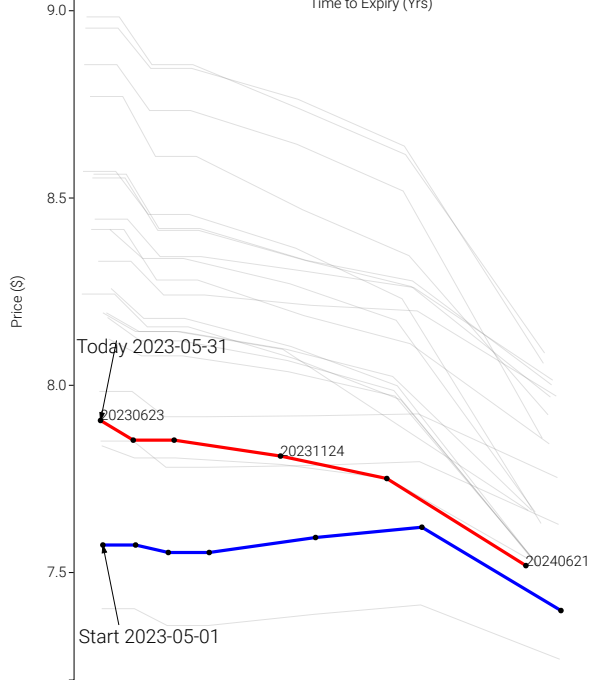
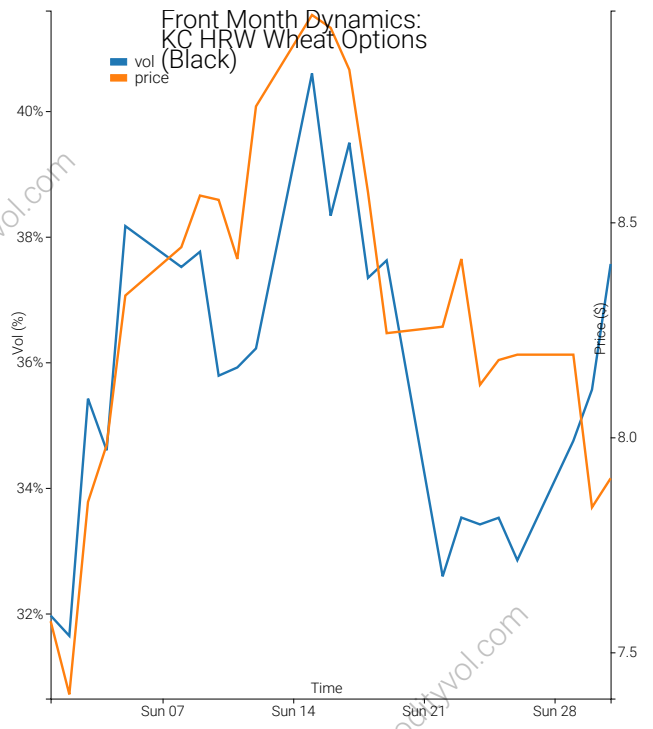
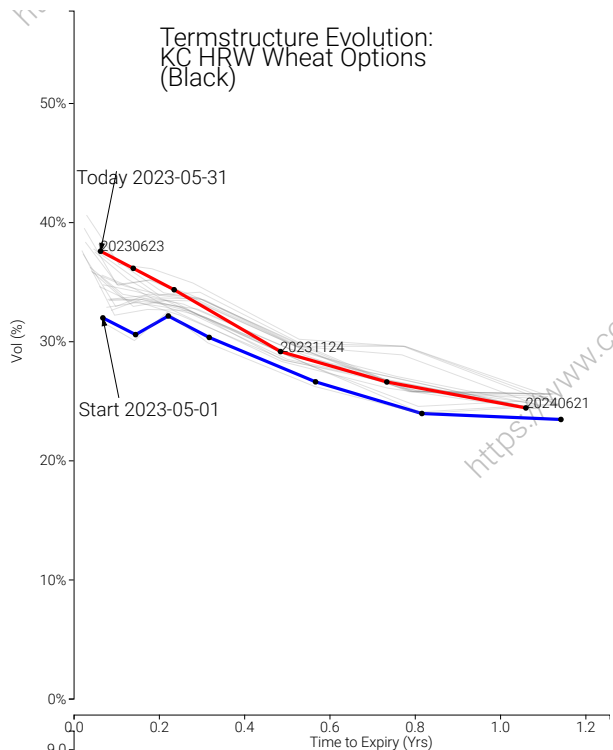


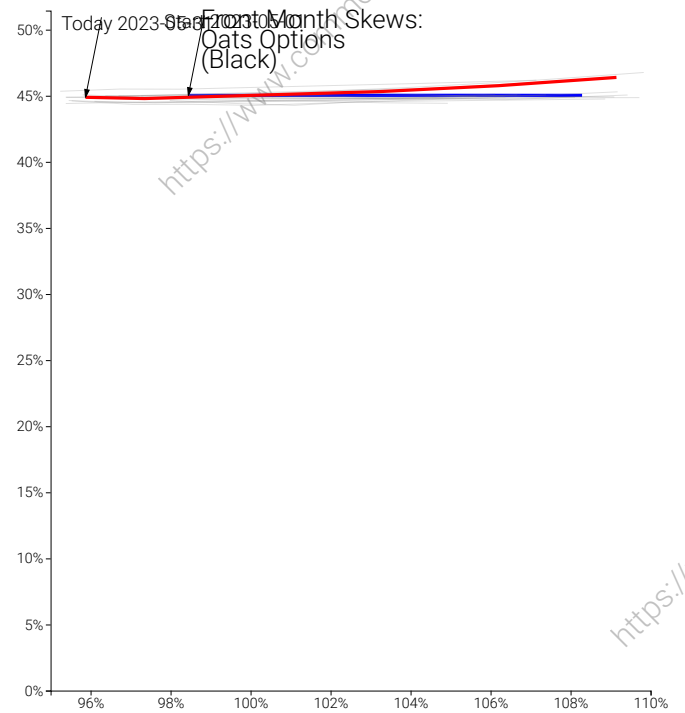
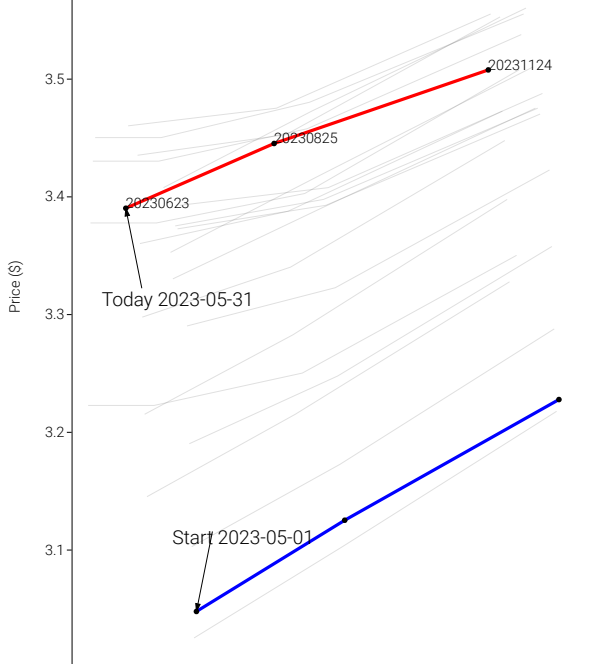
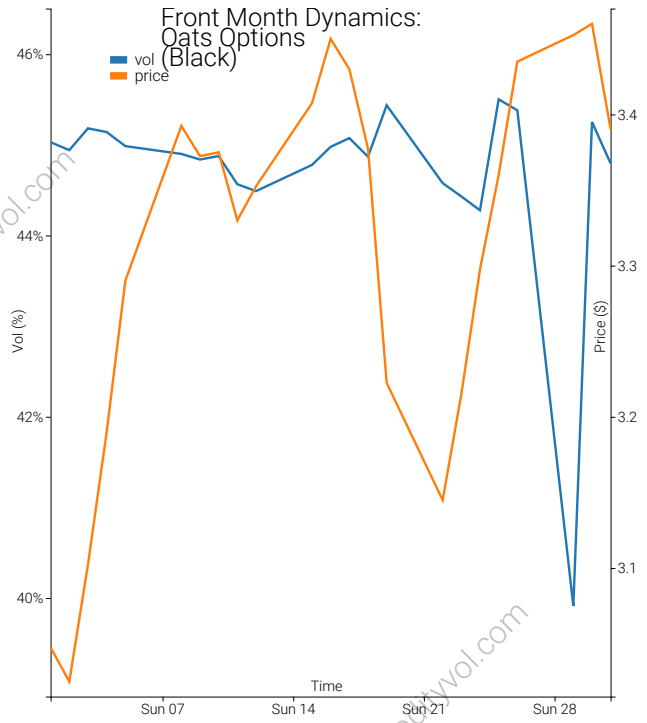
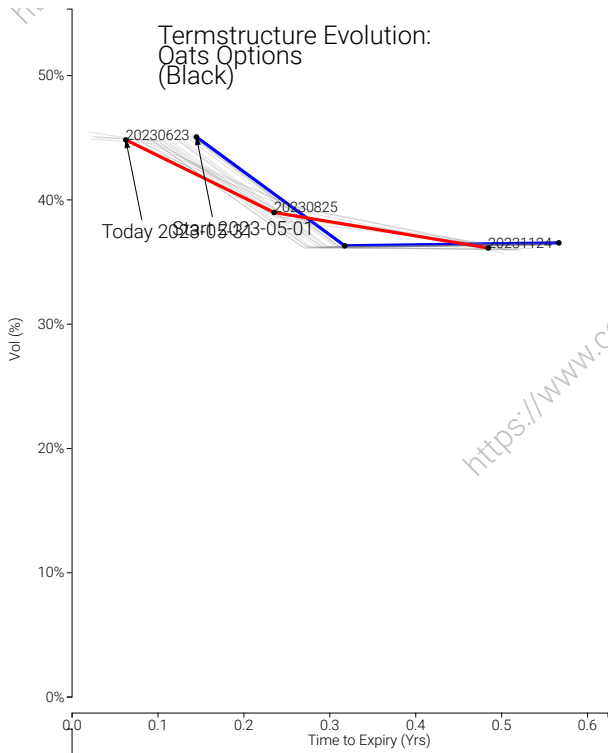


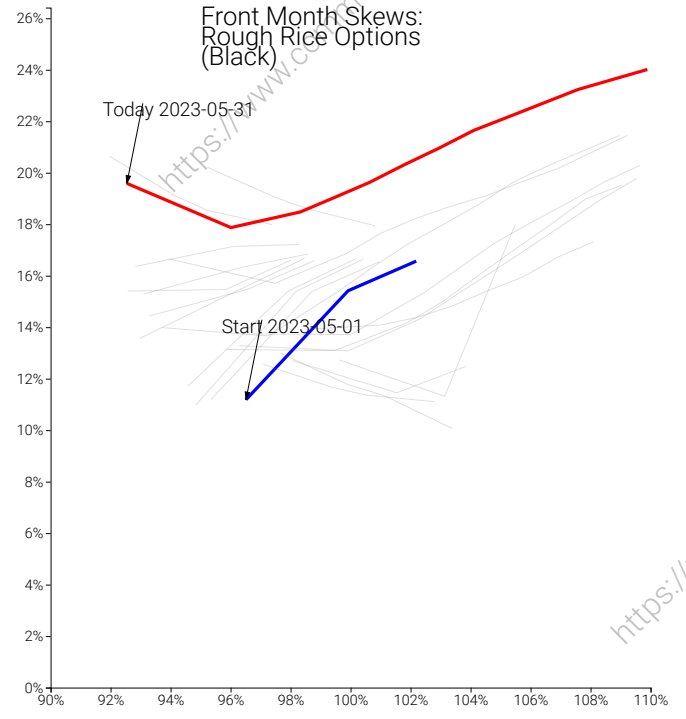
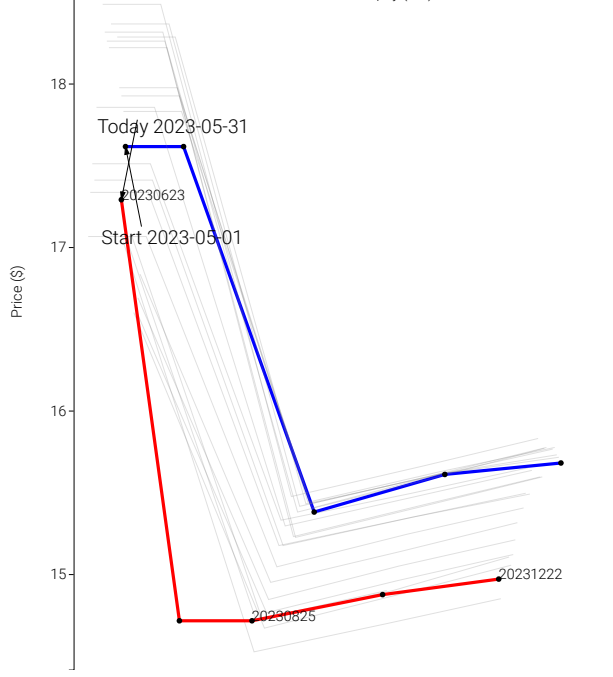
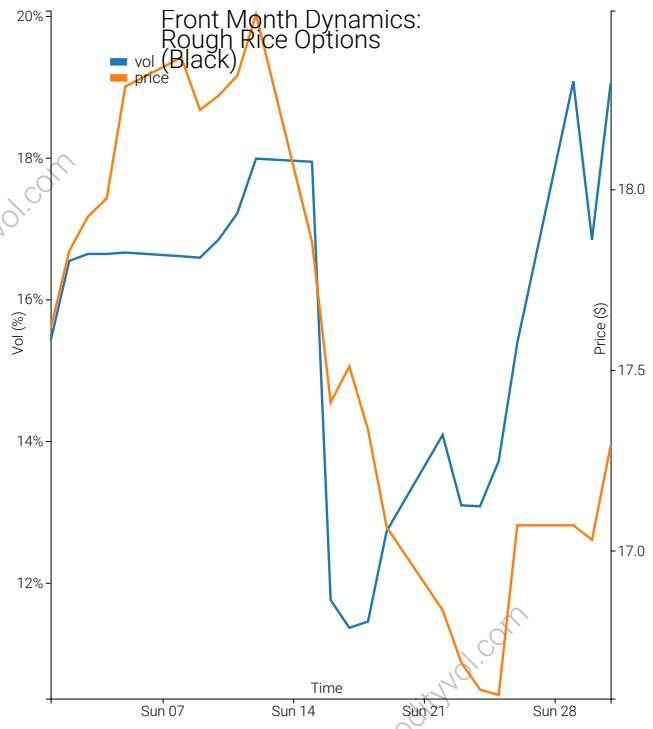
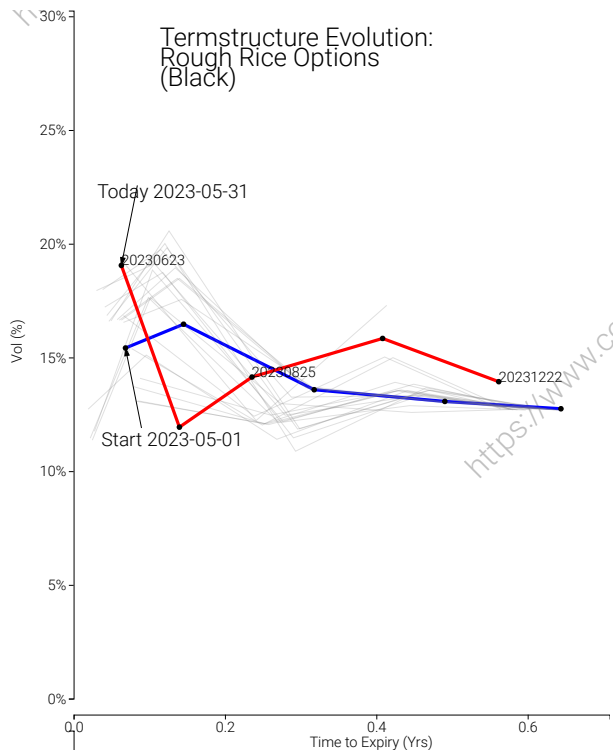


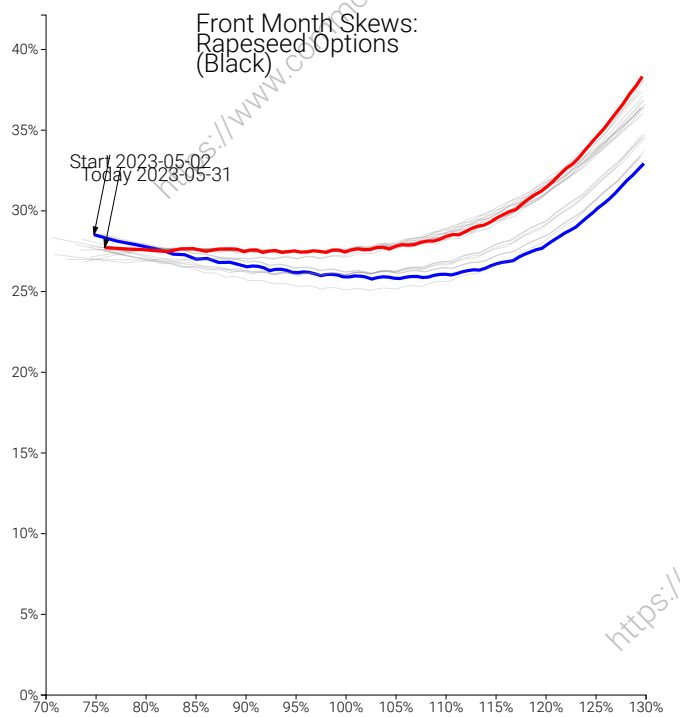
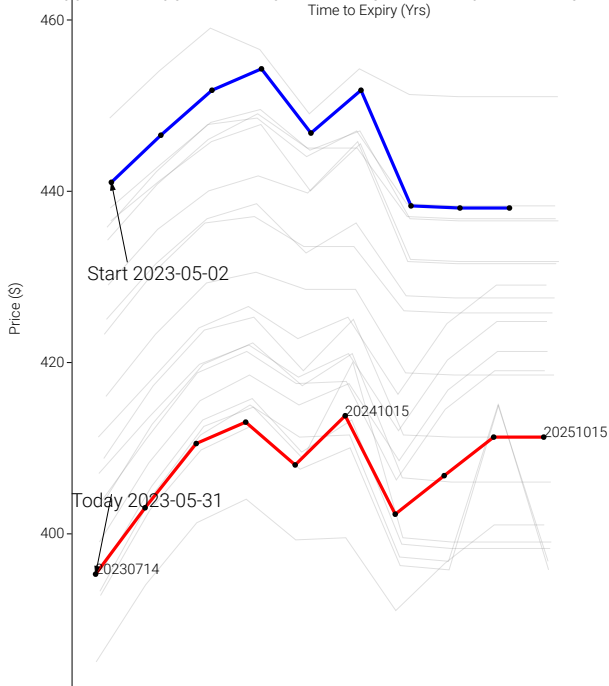
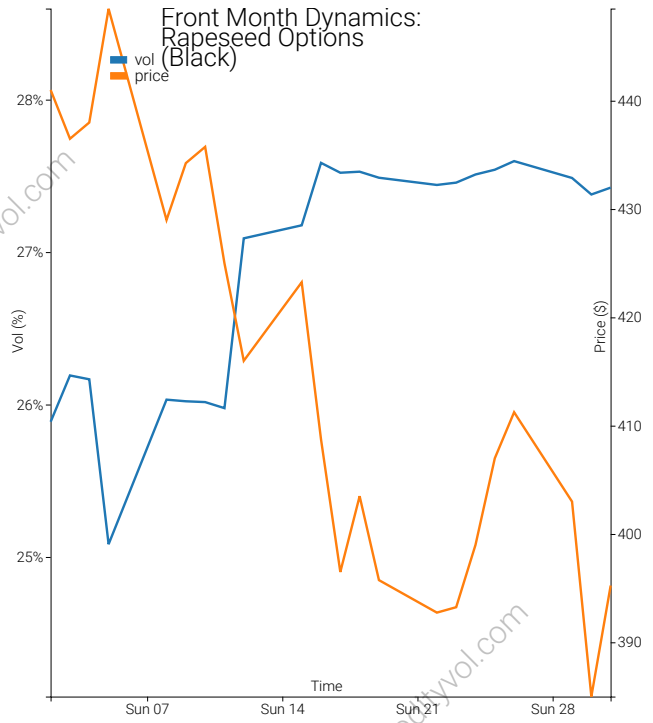
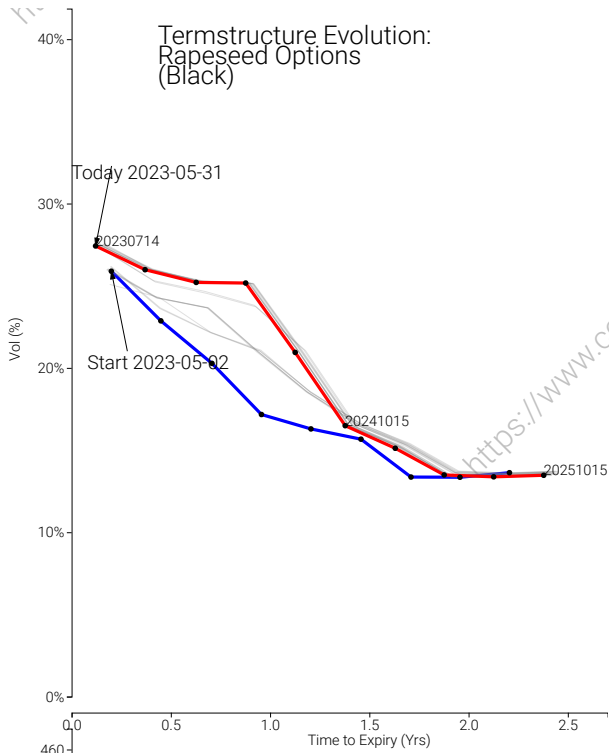




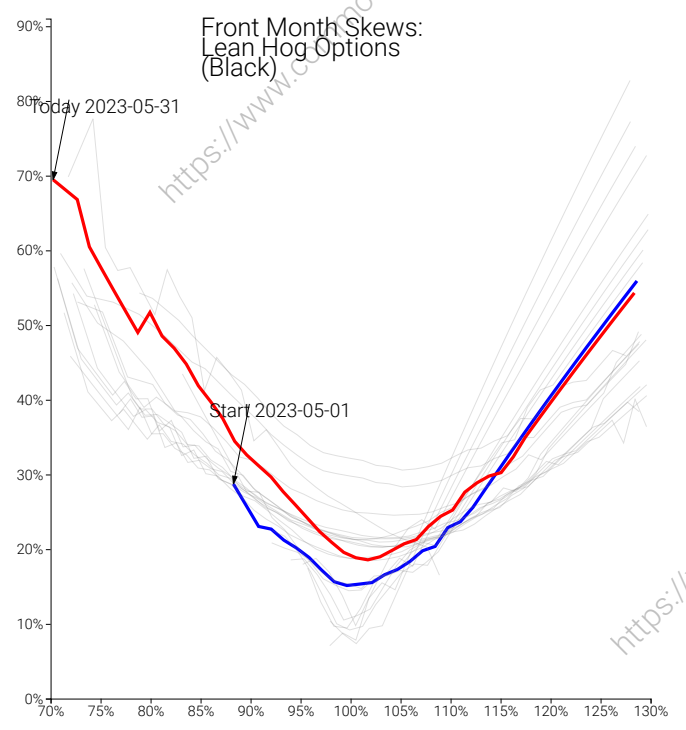
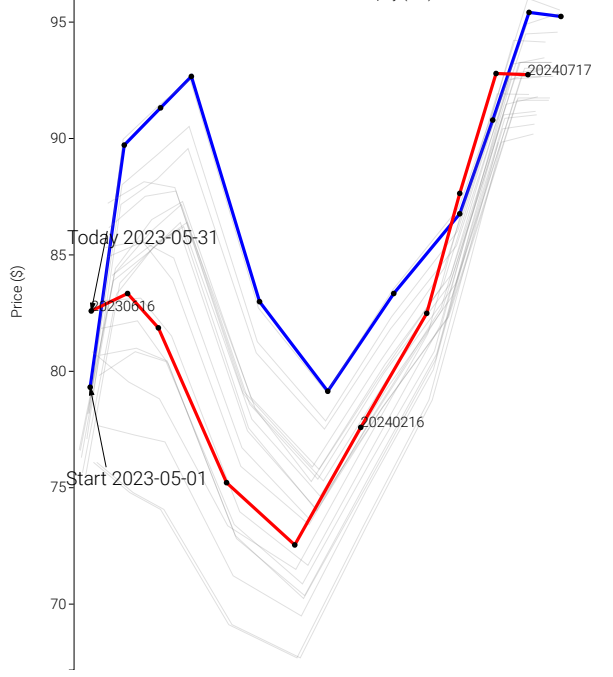
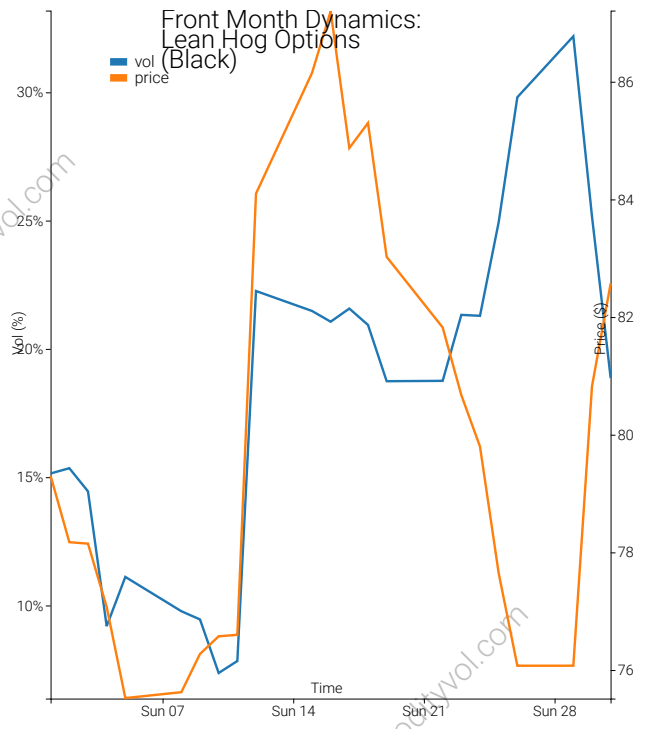
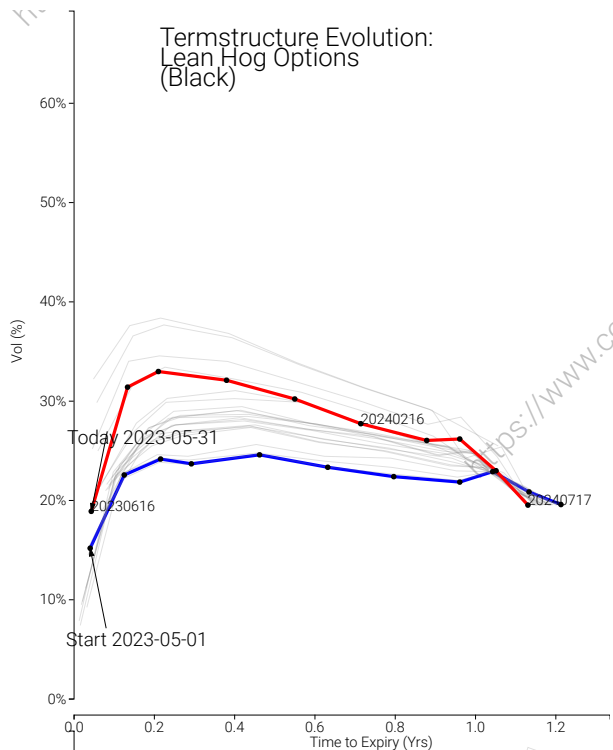


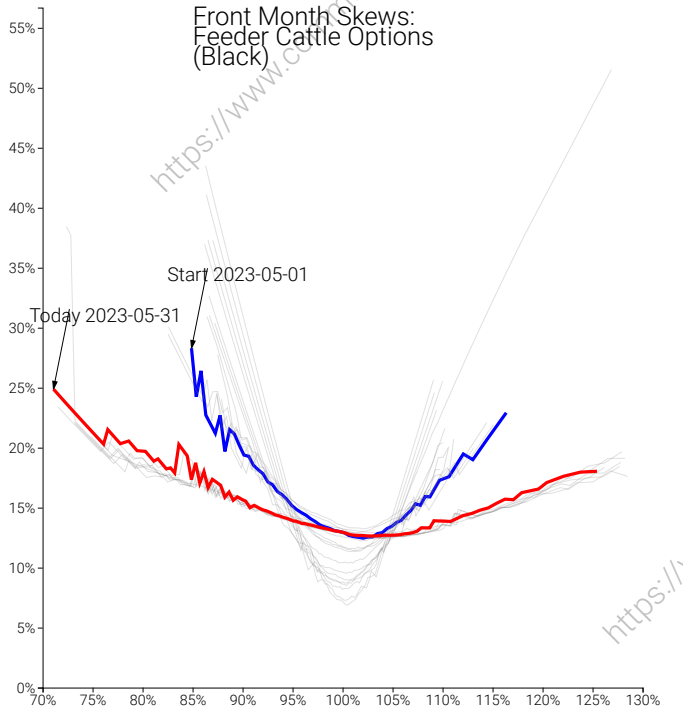
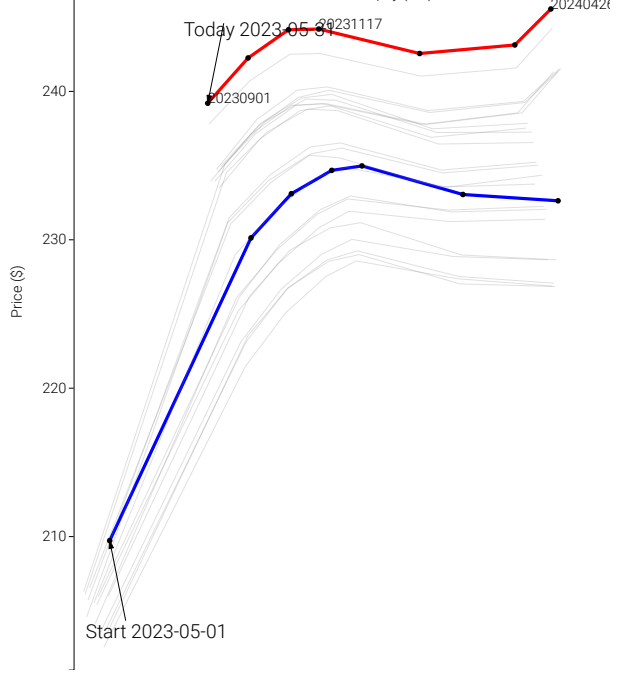
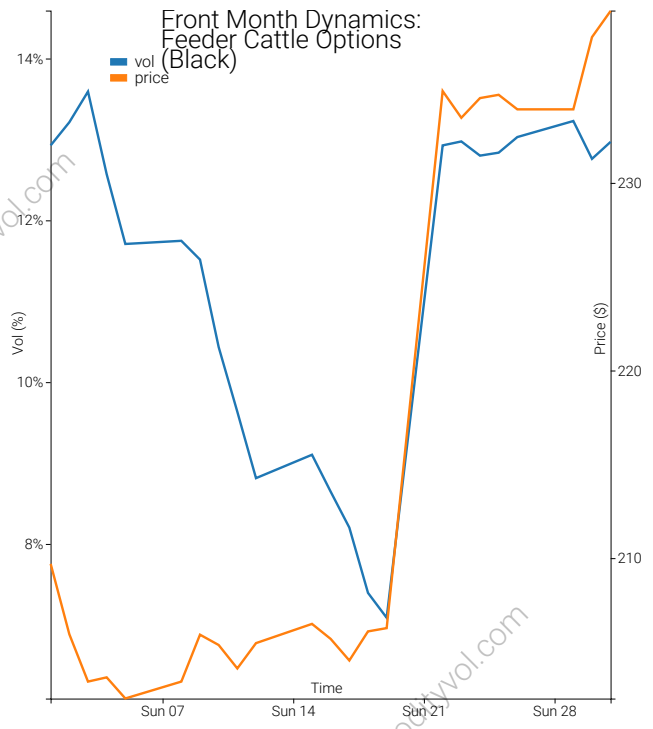
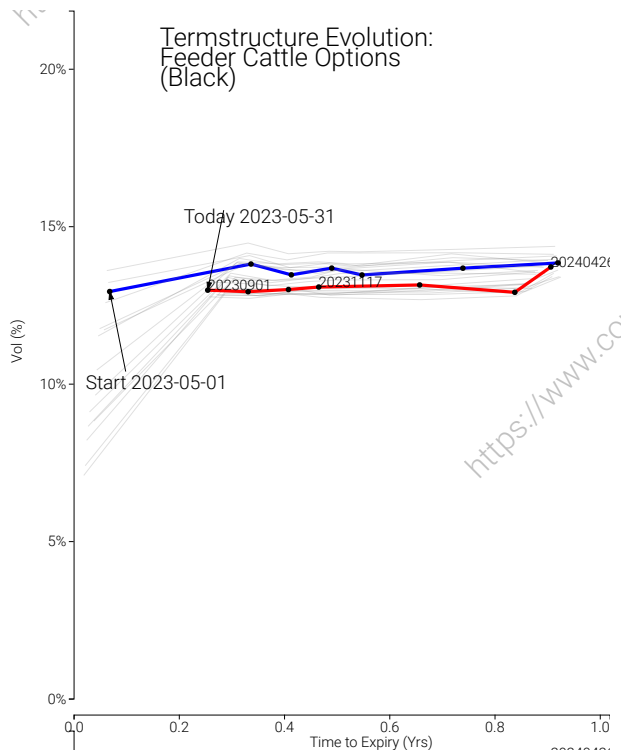


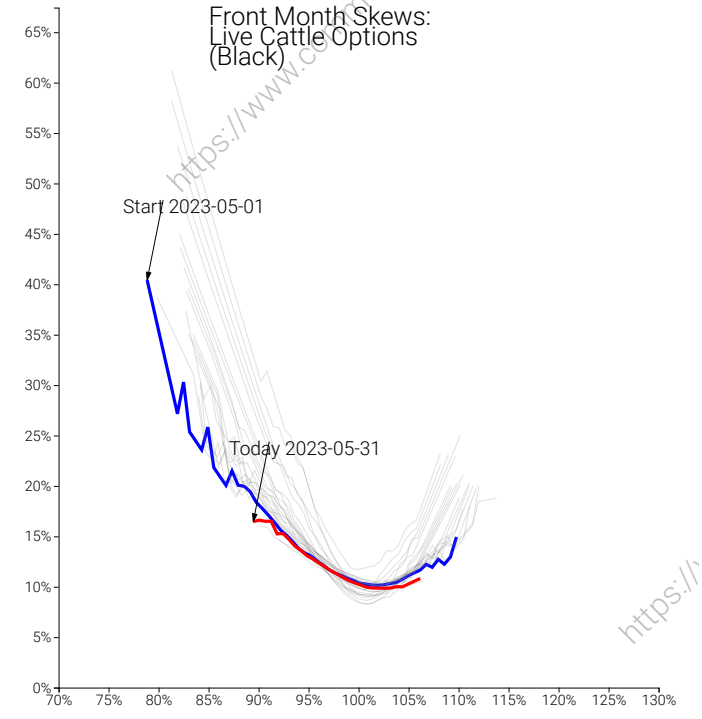
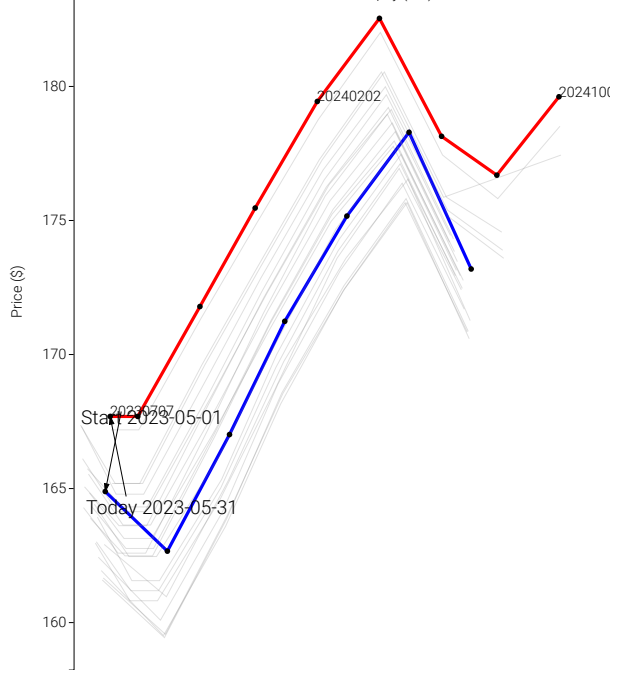
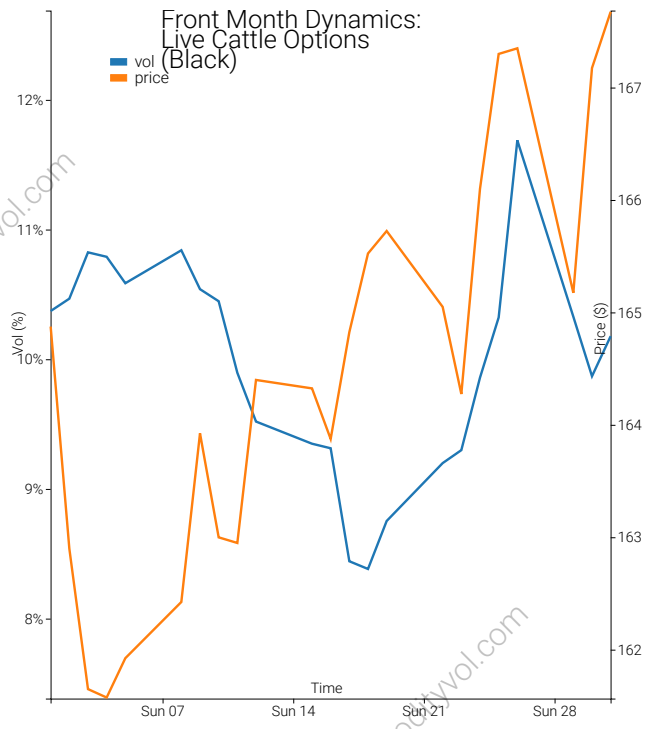
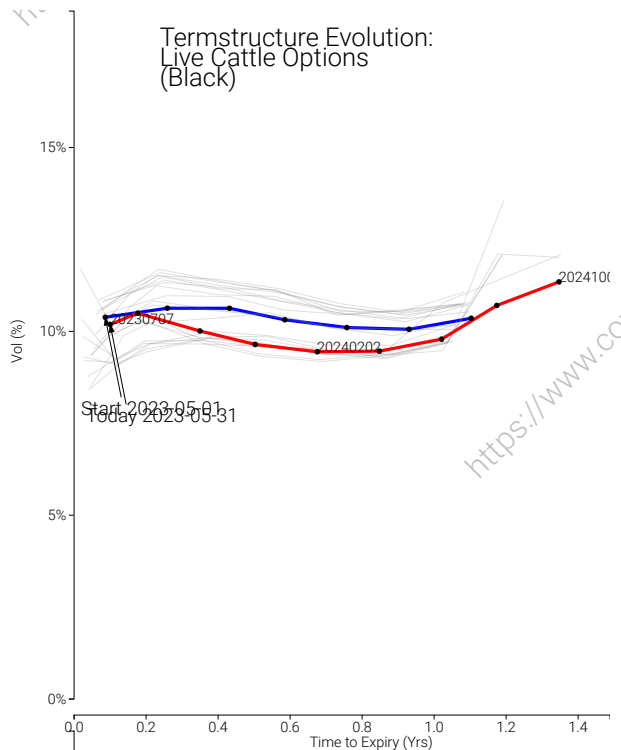


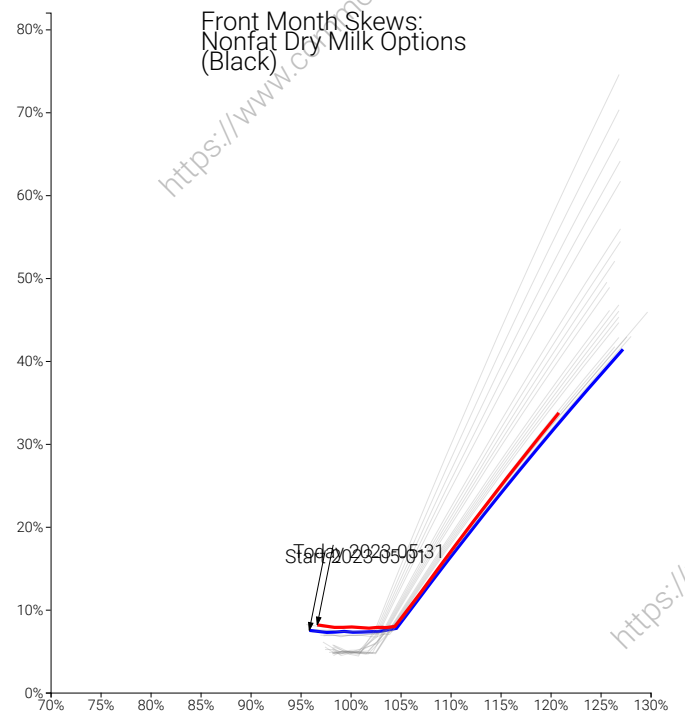
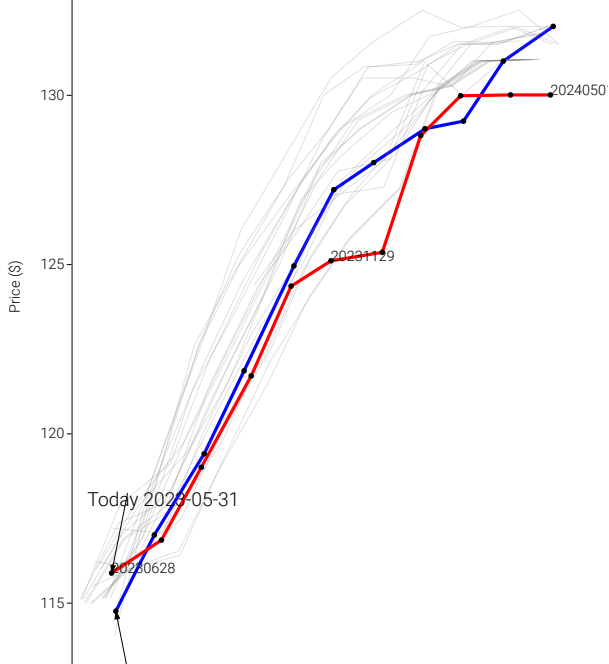
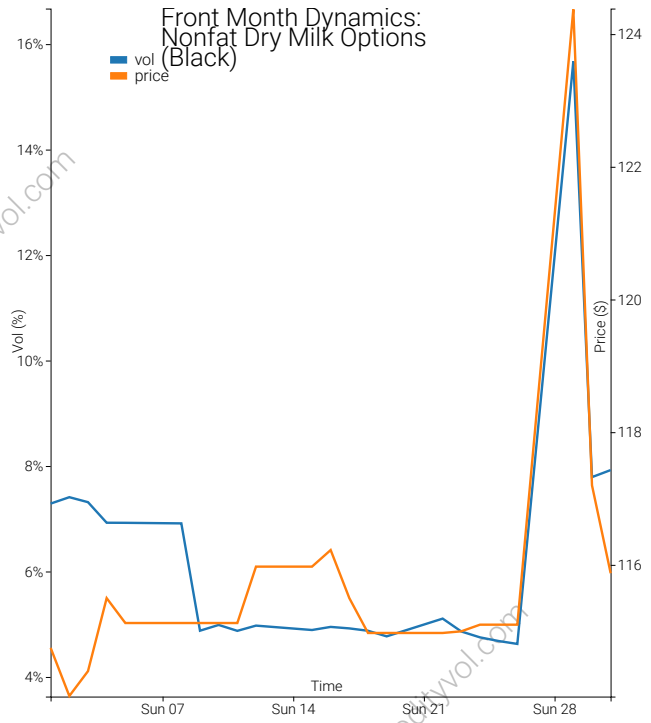
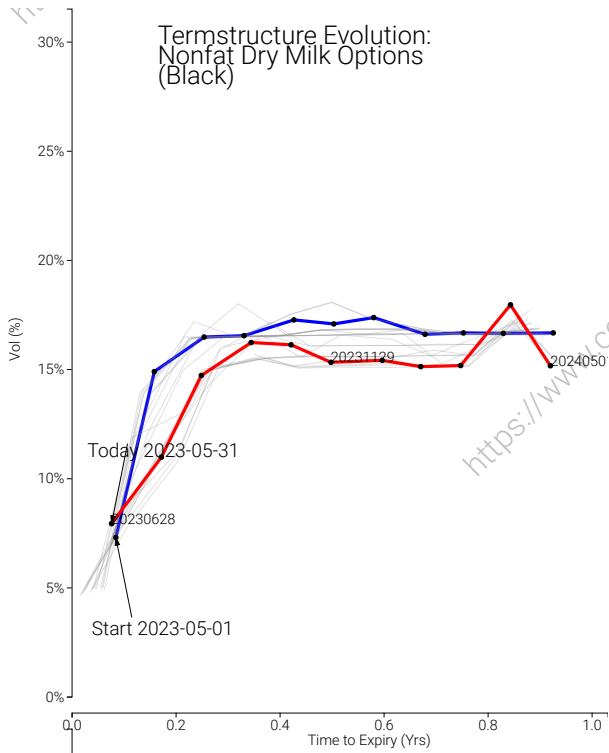


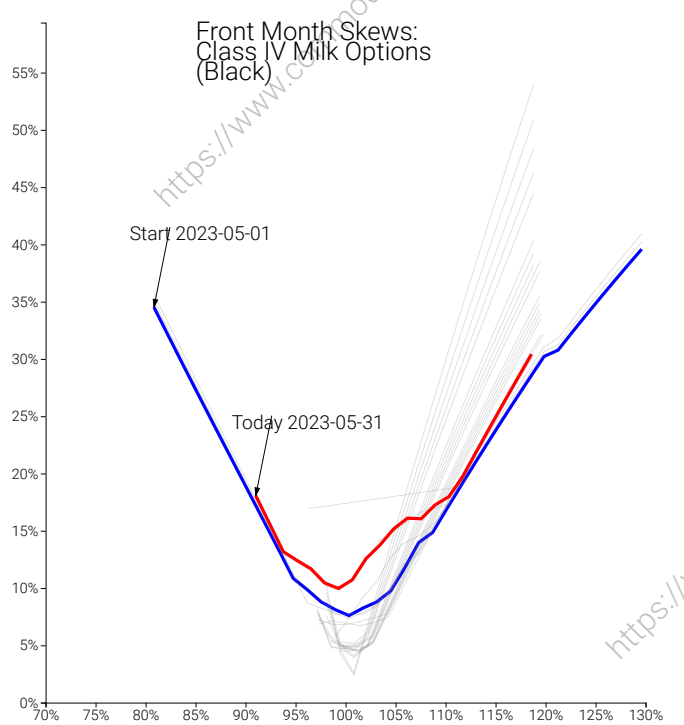
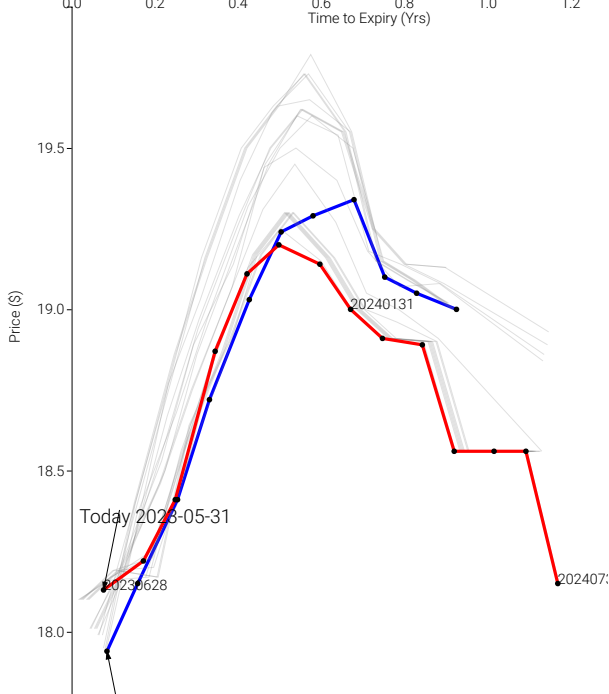
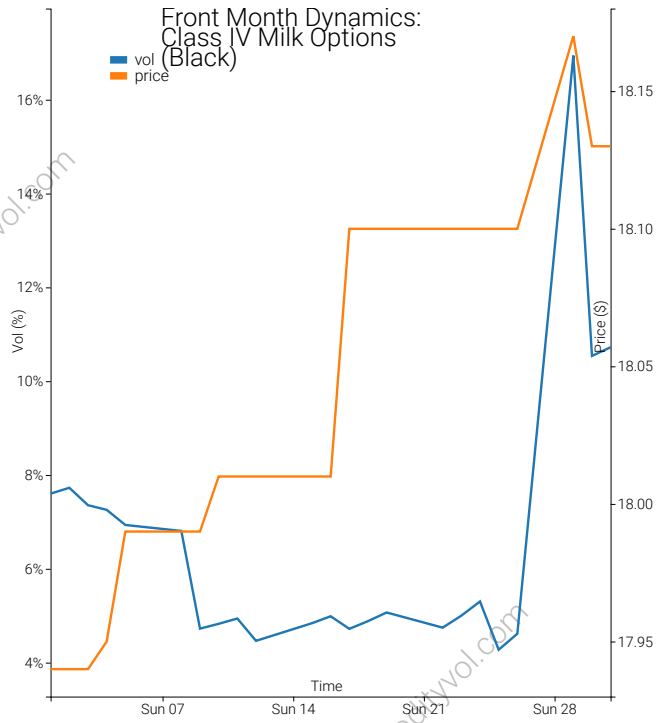
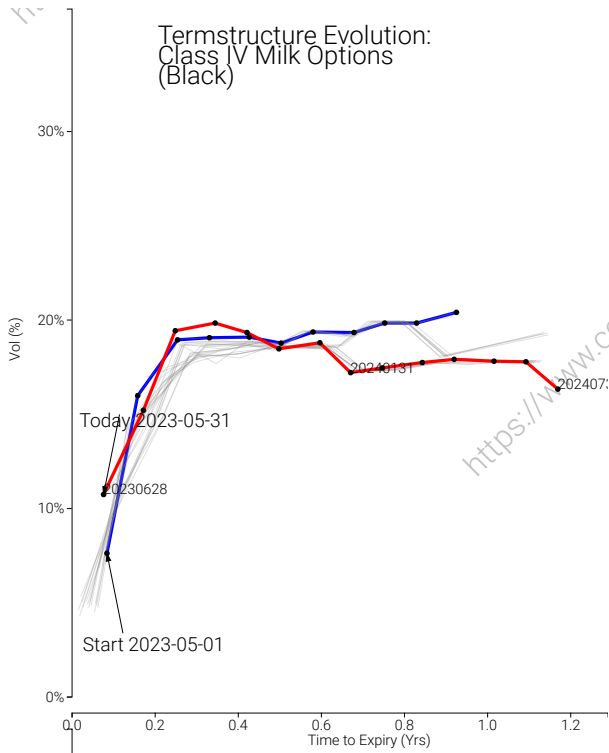
Ags: Proteins, Meats and so forth









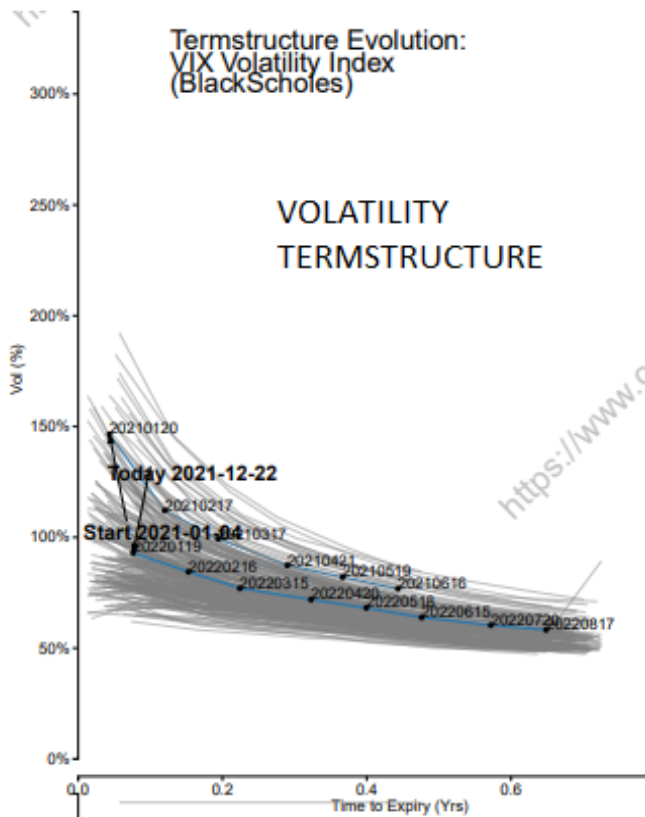


Explanation:

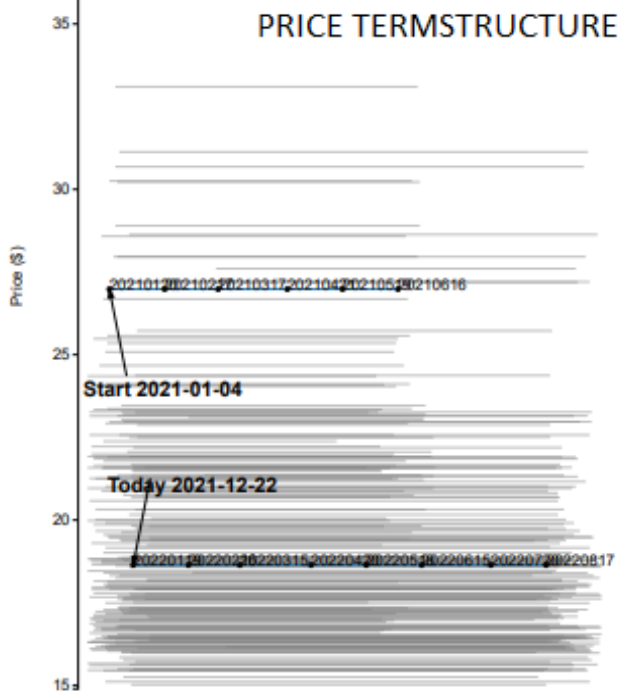
The document is composed of two parts. There is a tabular portion which summarizes the changes in front month futures prices and the changes in the at the money front month implied volatility. The results are presented as raw differences and percentage changes. The plots in this document try to give 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 Volatility 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.

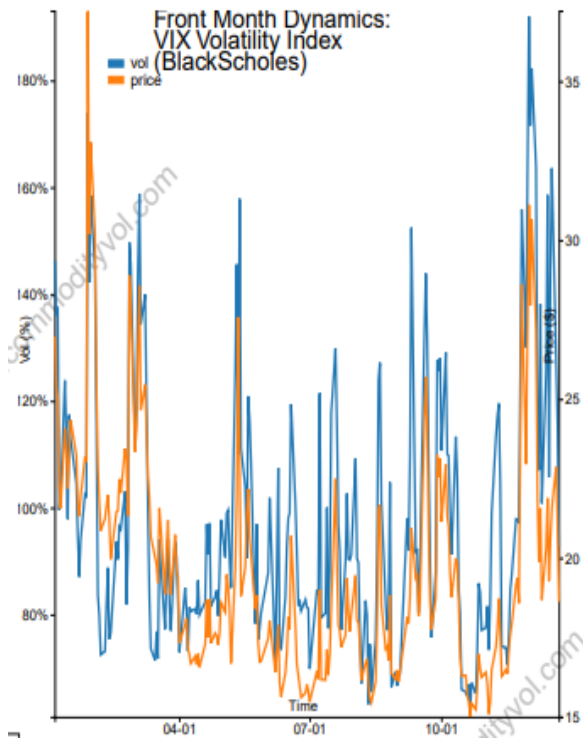


The starting curve is the termstructure at the beginning of the period. This curve is labelled start and is typically colored blue. The ending curve is typically colored red and denoted by the text: Today. The greyed out lines are the termstructures for each day of the period. The hope is that the range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



Front Month At the Money Volatility and Front Month Price Over the Year:

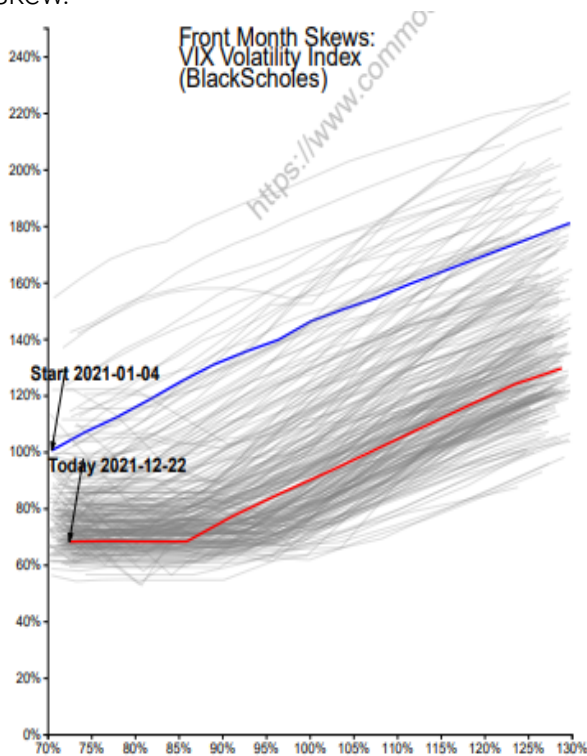
On the right hand panel we have the price and implied volatility of the front month contract.



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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