Bean there, sugared that
Advanced risk management for coffee and sugar

Richard Cornielje

KYOS Commodity Risk Solutions

April 2024

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KYOS - Overview

- International client base across Europe, plus Americas and Japan
- > 100 corporate clients

Trusted by organizations all over the world

KYOS

- **Background**
  - Activities started in 2001, Strong focus on risk management
  - Core competence: combine quantitative background with practical solutions

- **Activities**
  - Modelling

  Apply quantitative financial techniques to commodity markets

  - Software development: Analytical platform

  Practical approach for understandable risk reporting

  - Training

  Combine theory with real life examples

ERP, TMS compared to KYOS

- Physical Logistics
- Inventory
- Invoicing/Payments

- Positions, Cashflows
- MtM FX and IR
- Hedge Accounting

"RISK COMES FROM NOT KNOWING WHAT YOU'RE DOING."

WARREN BUFFET

- MtM valuations for all commodity derivatives
- Stress testing – Monte Carlo Simulations
  - prices
  - volatility
- Value-at-Risk (short term risks)
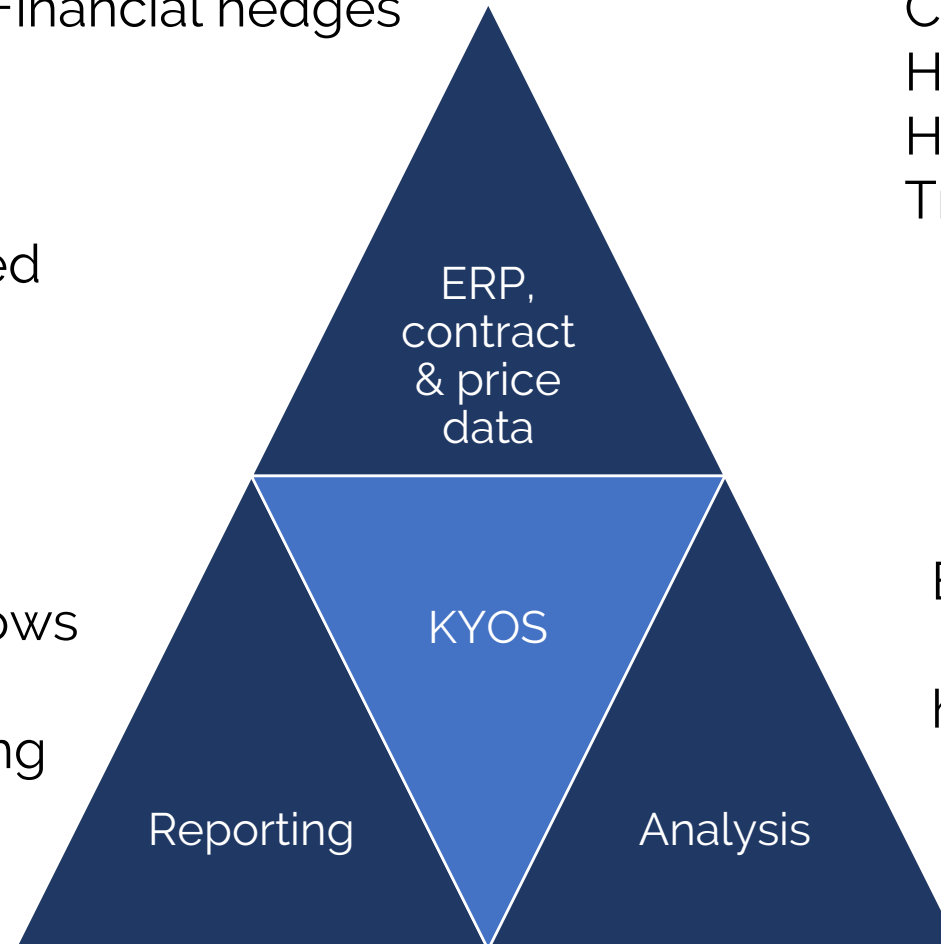- Cashflow-at-Risk (long term risks)

KYOS

Adding value to the chain – risk management

Physical flows + Financial hedges
Basis - Spread
Price analytics
- ✓ SFTP, API
- ✓ SaaS based

CPO/CFO
Head of Trading
Head of Risk
Treasury

Simulated cashflows
Insight in risks ($)
Coverage reporting

ERP,
contract
& price
data

KYOS

Reporting

Analysis

Enable you to look forward as ...

hindsight is a wonderfull thing

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Current markets are "volatile"

Coffee Arabica - Mar 2025

Export chart

1 Apr 2022 → 19 Apr 2024

● Coffee Arabica (Forward) : **227.50 USD cent/Lbs**

USD cent/Lbs

225
200
175
150

Sugar #11 - Mar 2025

Export chart

1 Apr 2022 → 19 Apr 2024

● Sugar #11 Fwds : **19.55 USD cent/Lbs**

USD cent/Lbs

24
22
20
18
16
14

Apr '22   Jun '22   Aug '22   Oct '22   Dec '22   Feb '23   Apr '23   Jun '23   Aug '23   Oct '23   Dec '23   Feb '24

Wednesday, 17 Apr 202

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Sales & Procurement : What can happen during a 2 weeks holiday in…..e.g…… Italy

CFO: What can happen the next 2 or 3 years

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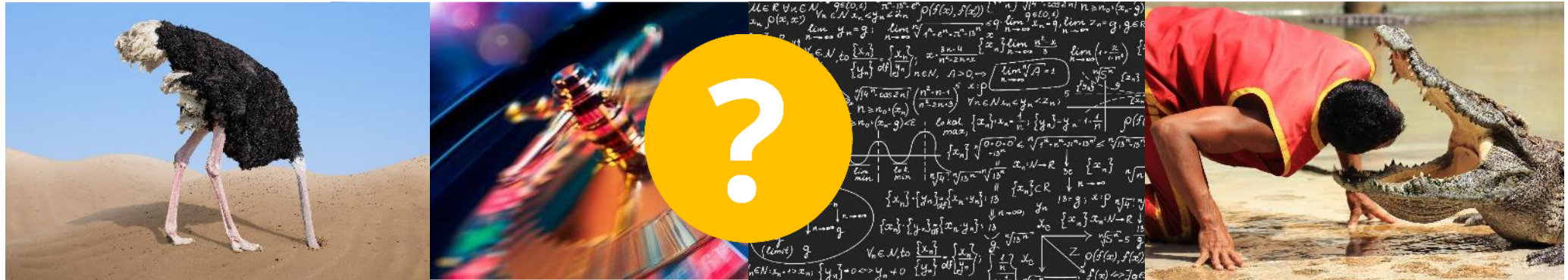# Struggle between brain, experience and gut feeling

Price risks can be calculated (estimated) of products bought and/or sold

Certainty is the "big" question
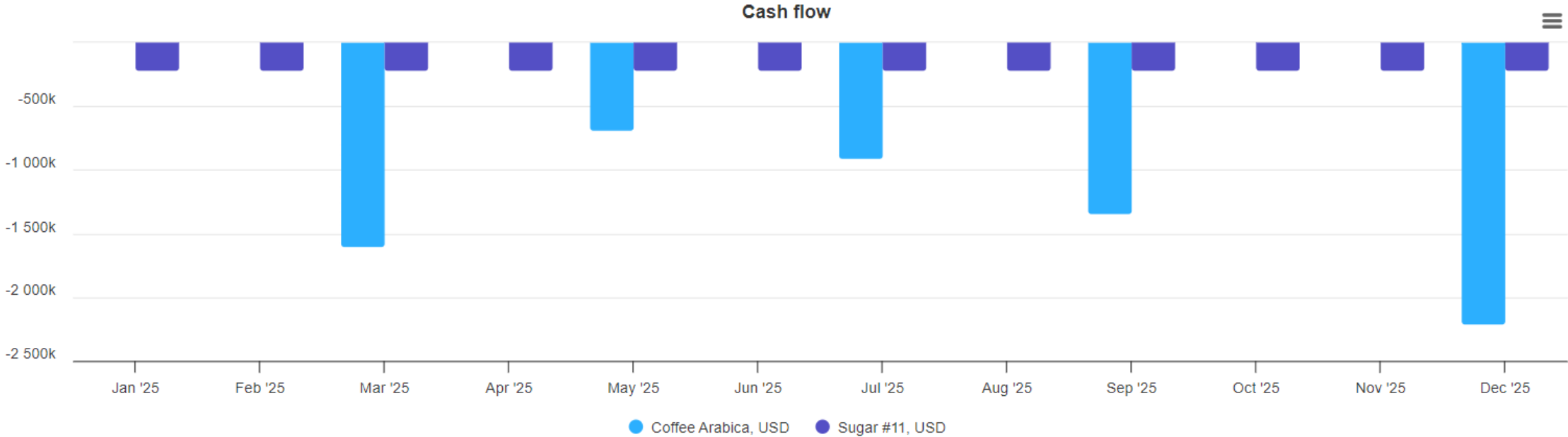
Estimating potential cash-flows

Suppose you need to buy:

13.2 million Lbs of **sugar** as well as 3 million Lbs of **arabica**

Concept is the same from straight forward commodities to

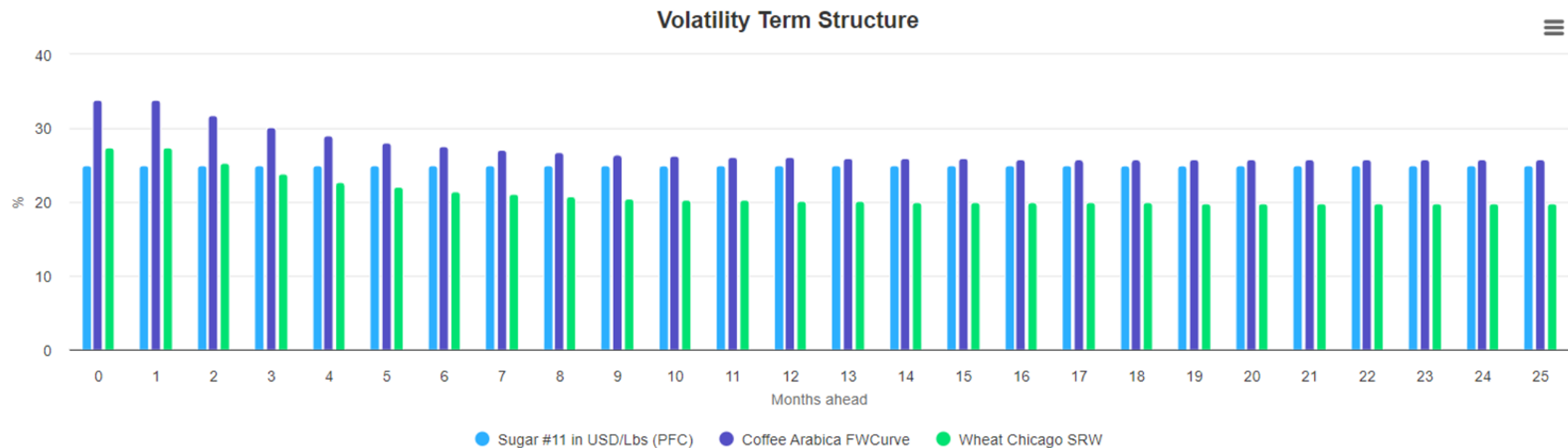"products" like: **Beer, bread and chocolate**
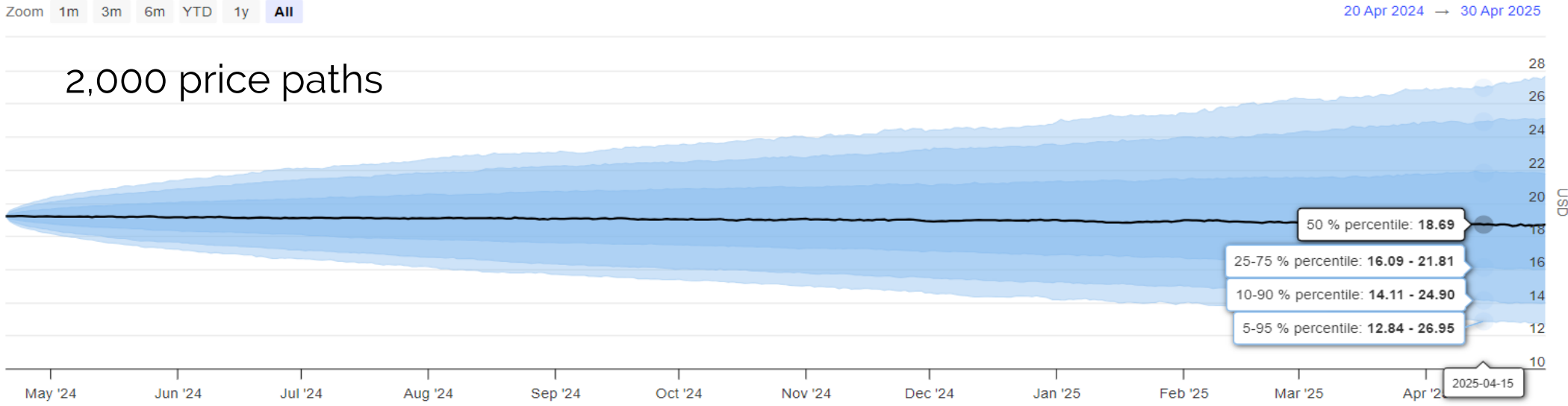
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Starting point: today's values

Cash flow

● Coffee Arabica, USD   ● Sugar #11, USD

KYOS CTRM

Commodity	Currency	Total	2025 Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Coffee Arabica	USD	-6,716,100	0	0	-1,592,500	0	-679,200	0	-900,200	0	-1,337,700	0	0	-2,206,500
Sugar #11	USD	-2,538,069	-211,506	-211,506	-211,506	-211,506	-211,506	-211,506	-211,506	-211,506	-211,506	-211,506	-211,506	-211,506
Total	USD	-9,254,169	-211,506	-211,506	-1,804,006	-211,506	-890,706	-211,506	-1,111,706	-211,506	-1,549,206	-211,506	-211,506	-2,418,006

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Calculating volatilities, correlations & "fun facts"

Volatility Term Structure

Legend: Sugar #11 in USD/Lbs (PFC), Coffee Arabica FWCurve, Wheat Chicago SRW

March 2025 Future	PRICE	Volatility	
Max	235.40	Max	47.64%
Min	150.50	Min	15.97%
AVG	181.86	AVG	28.22%
Current $cnt/Lbs	227.50	Current	27.11%

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Use all information to create Monte Carlo simulations
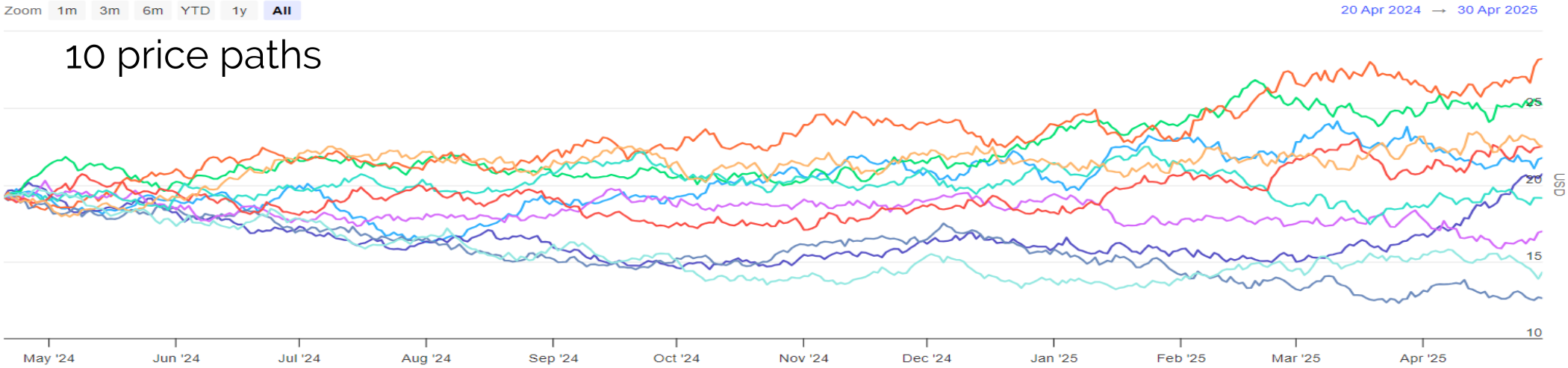
Long-term risk for buyers as well as producers

Commodity	Currency	Avg	95% at Risk	1%	5%	10%	25%	75%	90%	95%	99%
Total	**USD**	**-9,254,169**	**4,176,615**	**-16,548,387**	**-13,430,784**	**-12,132,975**	**-10,399,548**	**-7,731,785**	**-6,759,045**	**-6,295,554**	**-5,597,576**
Sugar #11	USD	-2,538,069	1,048,129	-4,139,954	-3,586,198	-3,272,343	-2,869,228	-2,136,783	-1,850,080	-1,732,959	-1,487,956
Coffee Arabica	USD	-6,716,100	4,083,158	-13,878,958	-10,799,258	-9,487,154	-7,755,014	-5,256,644	-4,353,601	-3,903,810	-3,287,932

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Short-term risks – trading companies – 1 day

VaR per commodity

2025
Sugar #11: **69 799.51** USD
Coffee Arabica: **168 997.72** USD
Wheat Chicago SRW: **264 433.04** USD
Total: **347 573.26** USD

● Sugar #11   ● Coffee Arabica   ● Wheat Chicago SRW   ● Total

KYOS CTRM
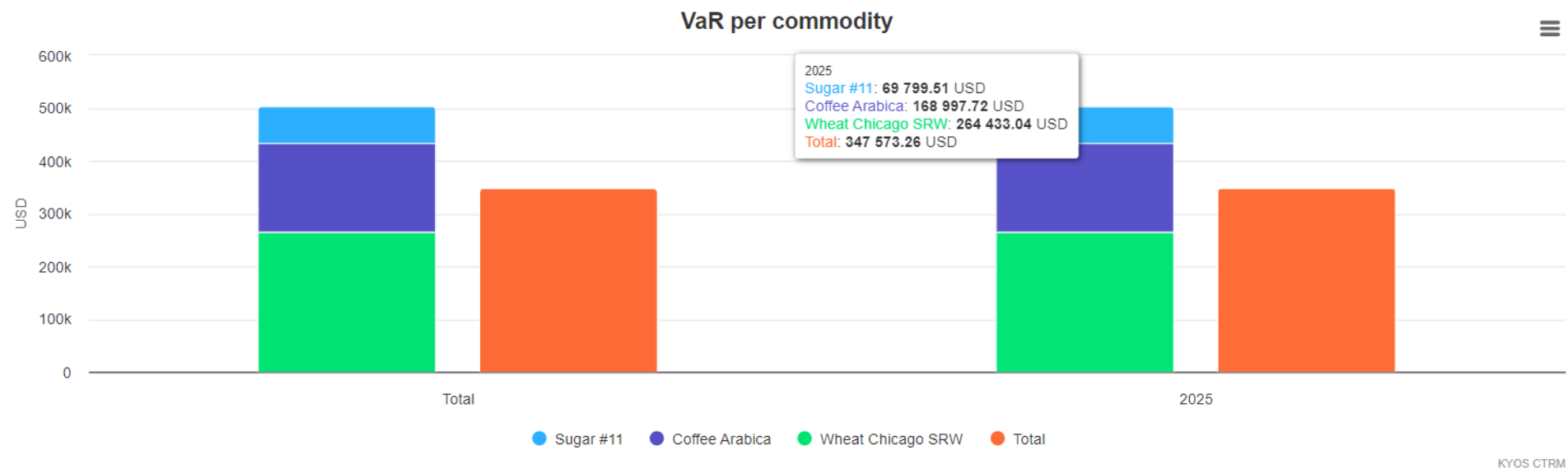
		VaR 2024-04-10 (USD)	
		Total	**Jan '25 - Dec '25**
VaR total		**347,573**	**347,573**
VaR per asset type	Contracts	347,573	347,573
VaR per commodity	Sugar #11	69,800	69,800
	Coffee Arabica	168,998	168,998
	Wheat Chicago SRW	264,433	264,433

Role of "fun facts"

March 2025 Future	PRICE	Volatility			
Max	235.40	Max	47.64%	Largest RISE	15.30
Min	150.50	Min	15.97%	Largest Fall	-11.75
AVG	181.86	AVG	28.22%	AVG Change	2.58
Current $cnt/Lbs	227.50	Current	27.11%	% > 2.5 $cnt/Lbs	42.16%

Starting point = Understand all basic facts:

Physical and Financial

Last fact: The market will surprise you, sooner or later

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Is an accumulator a hedge or a "fun trade"?

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Production   Richard Cornielje ▾

Settings | Price data | Time series | Curves | Assets & Contracts | Risk analytics | **Analytics** | Custom Analytics | Logs

KySwing | **KyCalibration** | KyPPA | KyOption | **KyAccumulator** | KySim

View results for profile CTW Arabica exposure

Download | Back to results

Trading date	Job ID	Job created at	Job created by	Name	Commodity	Counterparty
2024-04-19	312233	2024-04-22 19:10:53	KYOS | Richard Cornielje	CTW Arabica exposure	Coffee Arabica	Cargill Fin Services
Start accumulation		End accumulation		Settlement day		
2024-01-03		2025-02-26		2025-02-26		

Tables | Graphs

Accumulator Summary

		Basis		Leg-1		Total	
	Units/Currency	Intrinsic	Simulation	Intrinsic	Simulation	Intrinsic	Simulation
Total Position	Lots	61.83	76.29	22.67	42.23	84.50	118.52
Accumulation Price	USD cents	205.00	205.00	210.00	210.00	206.34	206.78
Settlement Price	USD cents	227.50	227.50	227.50	227.50	227.50	215.72
Mark to Market	USD	521,719	436,381	148,750	-39,312	670,469	397,068
Cash Flow - fixed leg	USD	-4,753,438	-5,864,813	-1,785,000	-3,325,967	-6,538,438	-9,190,780
Cash Flow - floating leg	USD	5,275,156	6,301,194	1,933,750	3,286,655	7,208,906	9,587,848

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Valuations of accumulators with MC Simulations
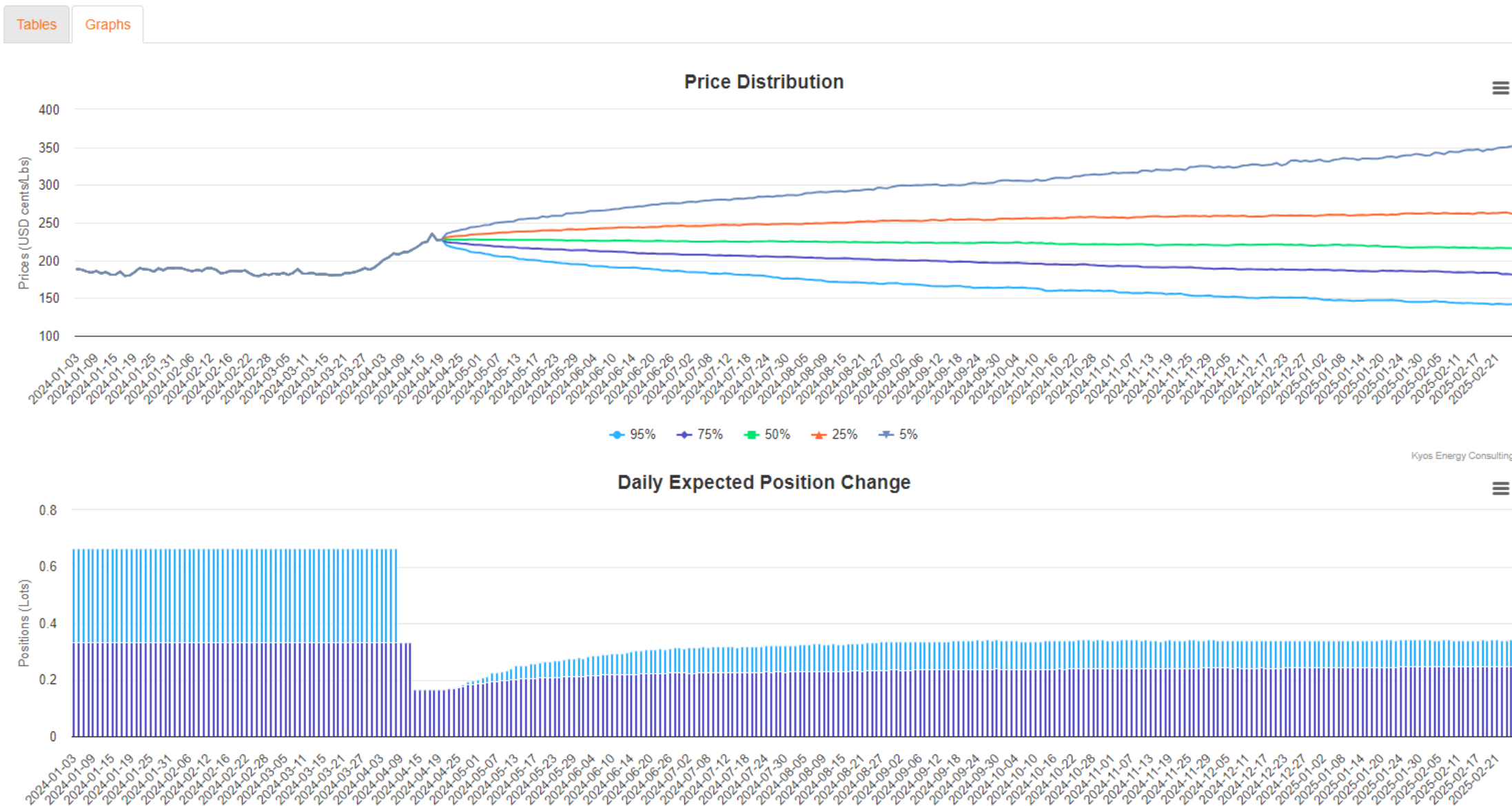
KYOS analytical platform

- Physical & Financial

- Cash-flow at risk (Cfar)
- Value-at-risk (VaR)
- Monte Carlo Price simulations
- Valuations of advanced hedging option structures, like accumulators

All delivered in a user-friendly, on-line SaaS based platform

Used by treasury, sales, procurement and finance

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THE KEY IS NOT TO PREDICT THE FUTURE, BUT TO BE PREPARED FOR THE FUTURE

PERICLES, 495 – 429 V. CHR.

Questions

Time for questions & answers!

More information

Looking forward supporting you with advice & tools!

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