



KYOS Commodity Risk Solutions

Insights in risks

Dairy products: butter & whey



March 2023

Learn about the risks of a commodity portfolio with KYOS Insight in Risks.

What are the risks you are facing? At KYOS we offer several analytical modules in our platform to optimize your business:

- **Risk reporting:** understanding the current situation
- **Risk analytics:** simulating the future.

In this report we would like to explain two important advanced risk metrics: Cashflow-At-Risk and Value-At-Risk. These are based on market price volatilities, correlations and Monte Carlo simulations,

We will compare two commodities to illustrate the amount at risk, and what measures you could take to mitigate the risk.

Advanced risks metrics offered by KYOS:

- **Stress tests:** how are your financial results if there is a specific change in market prices, volatilities or positions?
- **Options and accumulators:** what are the values of your derivatives, using Monte Carlo simulations?
- **Value-at-Risk:** what is a '95% worst-case' impact on your MtM in one single day?
- **Cashflow-at-Risk / Profit-at-Risk:** what is a '95% worst-case' scenario of your cash-flows over a longer period?

Portfolio example: butter and whey

In this example we show a food producer who needs to buy butter and whey during the budget year 2024. In the table below we compare the costs to buy this portfolio on the forward market.

			24 March 2023
Commodity	Exposure	Average price	Total
Butter	1500 MT	5234 € / MT	€ 7.85 million
Whey	7200 MT	860.83 € / MT	€ 6.20 million
Total			€ 14.05 million

Insights in risks

Butter and whey



Cash-flow at Risk

The Cashflow-at-Risk is calculated as a '95% worst-case' scenario of your cash-flows over a longer period. If you do not hedge this "floating priced" position, your Cashflow-at-Risk (=CfaR) from today until 31 December 2024 (=21 months) can be presented as the potential cashflow difference between:

Sourcing volume * current market prices versus

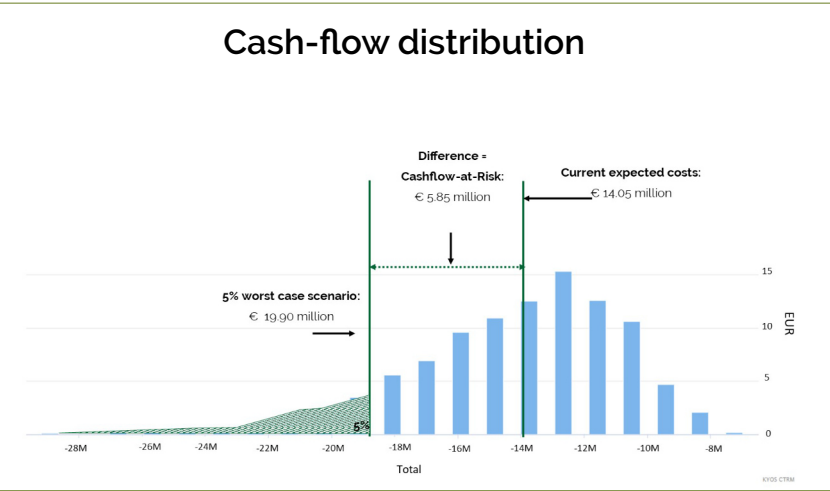
Sourcing volume * simulated market prices

	24 March 2023
Current value	€ 14.05 million
5% worst case scenario	€ 19.90 million
Cashflow-at-Risk	€19.90– 14.05 = € 5.85 million

We estimate with 95% confidence that the total costs to source these two commodities will not be more than € 19.90 million. This means that the difference between the current costs € 14.05 million and the worst-case costs (€ 19.90 mio) is the CfaR of € 5.85 million.

To reduce the CfaR, you could use financial instruments like hedging with swaps, futures and/or options. What will you do? Hedge now, at current market prices and pay € 14.05 million? Or leave it open? There is a 5% chance that costs will go up and you have to pay an extra € 5.85 million—or more.

The graph underneath shows the distribution of the CfaR.

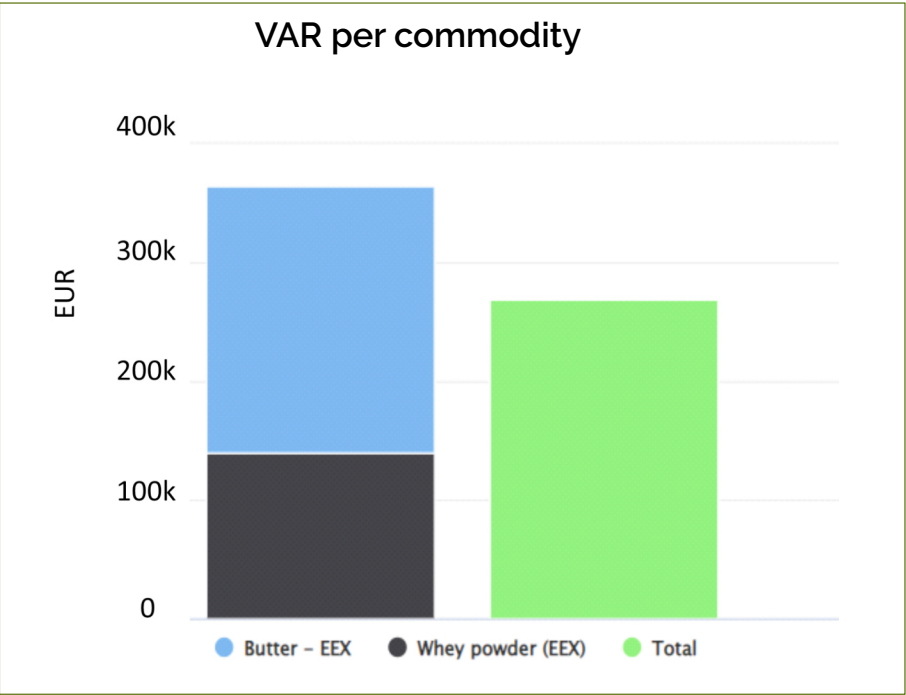


Value-at-Risk

The Value-at-Risk shows the '95% worst-case' impact on your MtM due to various price changes in the short-term.

The graph shows the Value-at-Risk for a basket of commodities: left for the individual commodities butter and whey, on the right for the two together. Do you notice the difference? The combined exposure is lower than the sum of the two because the commodity prices are not strongly correlated.

See in the table the Value-at-Risk calculations for 1 day. We also show how quickly the value could go up (or down) for 10 days (holiday scenario). Beware that this is not the maximum. The actual cost increase may be higher with 5% probability.



VAR Per commodity: 1 day vs 10 days - all amounts in Euro.

		24 March 2023	
Commodity	Exposure	1 day	10 days
Butter	1500 MT	225,500	697,540
Whey	7200 MT	139,430	460,170
Total individual		364,930	1,157,710
Total basket		268,560	898,160

Market Trend

The two graphs underneath show the prices per individual commodity.

For butter, the upward trend since May 2020 reached a plateau during January - September 2022. Since then prices have declined steadily, as demand for dairy products dropped - reasons for this are the trend towards a more vegan lifestyle, economic slow-down and the pressure of inflation on the consumer's budget. Milk production however was good and better than expected. Butter price on the EEX hovers currently at €4500.

For whey, a similar pattern can be observed. After an unprecented high around May 2022 where prices peaked at €1500 per MT, prices have halved are now even under €750 per MT.

In three months we will recalculate these figures so we can compare.





Advantages KYOS Portfolio and Risk Management System

Short term versus Long term

KYOS software is used globally by procurement teams to calculate short- and long-term risks.

Short term risks can be calculated using stress tests or by using Value@Risk (=VaR) calculations. VaR can be calculated using different modelling techniques and depending on the underlying commodity, clients should apply a different technique.

Accumulators - embedded options

Many clients in the food & beverage industry use accumulators to manage the price risk. KYOS has developed software to verify price valuations. It enables our clients to have an independent calculation of the value as well as the MtM. It also enables clients to play with the strikes to find their optimum.

KYOS adds value

To help you understand price risks and improve your company's cash flow prediction, KYOS has developed risk management software to effectively manage any commodity portfolio. This software is tailor-made to reflect your specific requirements. The KYOS commodity portfolio & risk management system captures years of industrial experience in managing budgets, commodity contracts, physical and/or financial hedging, market price analysis including sophisticated cash flow forecasting.

For all departments

Are you still using different spreadsheets to calculate your numbers? Whether you are in Procurement, Sales, Finance or Treasury – every department needs good, dependable figures. We at KYOS are confident a good cash flow forecast will make your life easier.

Please do not hesitate to contact us so we can discuss how we can help you save time – and probably money too.

This is just a brief overview of what we can offer you. Have a look at our website www.kyos.com for more detailed information.

Do not hesitate to contact us for more information, or a short demonstration: info@kyos.com



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