



# KYOS Commodity Risk Solutions

## Insights in risks

### Butter & Whey



November 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 dairy 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.

Commodity	Exposure	24 Mar 2023		15 Nov 2023	
		Average price	Total	Average price	Total
Butter	1500 MT	5234 € / MT	€ 7.85 million	5865 € / MT	€ 8.80 million
Whey	7200 MT	860.83 € / MT	€ 6.20 million	935.17 € / MT	€ 6.73 million
Total			<b>€ 14.05 million</b>		<b>€ 15.53 million</b>

# hts 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 (=13 months) can be presented as the potential cashflow difference between:

Sourcing volume \* current market prices versus

Sourcing volume \* simulated market prices

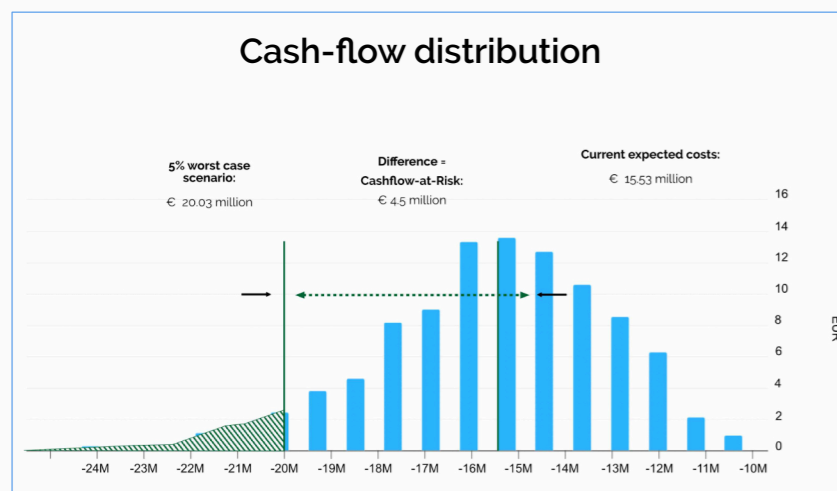
	24 Mar 2023	15 Nov 2023
Current value	€ 14.05 million	€ 15.53 million
5% worst case scenario	€ 19.90 million	€ 20.03 million
Cashflow-at-Risk	€19.90 - 14.05 = € 5.85 million	€20.03 - 15.53 = € 4.5 million

We estimate with 95% confidence that the total costs to source these two commodities will not be more than € 20.03 million. This means that the difference between the current costs € 15.53 million and the worst-case costs (20.03) is the CfaR of € 4.5 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 € 15.53 million?

Or leave it open? There is a 5% chance that costs will go up and you have to pay an extra € 4.5 million—or more.

The graph underneath shows the distribution of the CfaR.

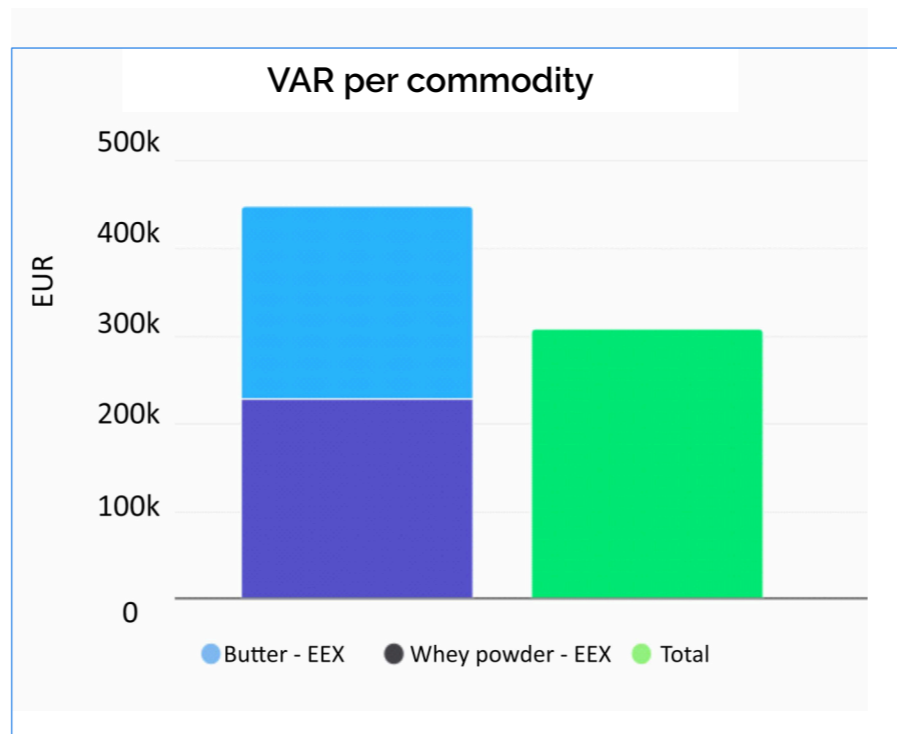


### Value-at-Risk

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.



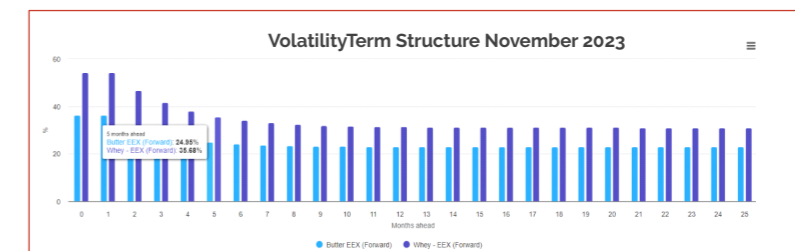
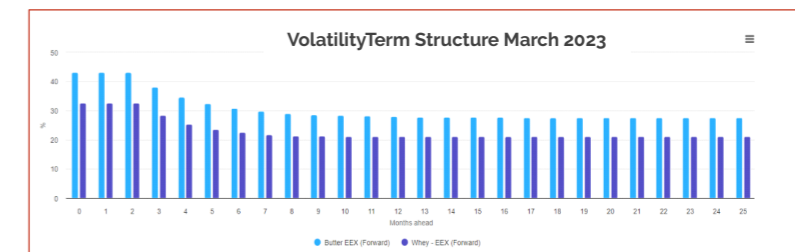
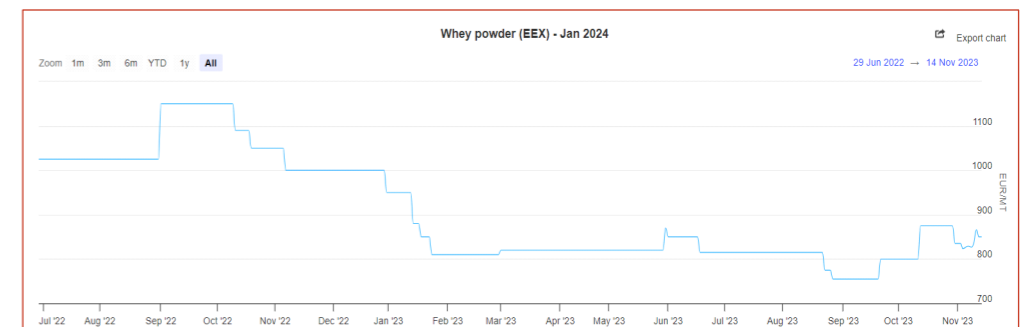
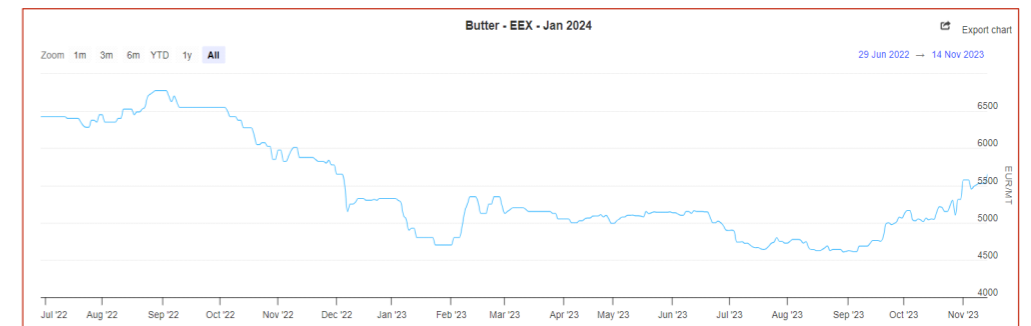
VAR Per commodity: 1 day vs 10 days - all amounts in Euros.

Commodity	Exposure	24 Mar 2023		15 Nov 2023	
		1 day	10 days	1 day	10 days
Butter	1500 MT	225,500	697,540	220,563	690,029
Whey	7200 MT	139,430	460,170	228,345	709,676
Total individual		364,930	1,157,710	448,908	1,399,705
<b>Total basket</b>		<b>268,560</b>	<b>898,160</b>	<b>309,877</b>	<b>1,035,128</b>

### Market Trend

Compared to March 2023, the costs of buying this portfolio of butter and whey has gone up by 10%. After a slight decline over the summer, both commodities are on the rise - see the price development graphs.

An interesting development can be observed on the volatility. In March 2023, butter was the more volatile component of the two. In November, this is reversed.





## 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](http://www.kyos.com) for more detailed information.

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



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