Insight in Risks

March 2020

How to use historical volatility of sugar prices to estimate your cashflows

World sugar production

In the crop season 2018/2019, 179 million metric tons were produced. For 2019/2020, the output is expected to rise to 181 million metric tons.

The largest producer of sugar is now India, good for 33 metric tons or 19% of the production. Second largest producer is Brazil. Next to India and Brazil, a significant amount of sugar is also produced in European Union, China, Thailand and the United States.

Historically, the largest producer of sugar was Brazil. The country however is still a large producer with 29.5 metric tons. It should be noted that Brazil's cane production is more and more used to produce ethanol as this is more profitable for the farmers.[i]

For the current season, India expects a drop in production though, due to draughts in 2018 and flooding in 2019. Draughts are also causing problems in Thailand, Although Thailand is a relatively small producer with 7% of world volume, it is a large exporter. The failing harvest of Thailand is therefore causing some problems in the world supply and demand – and contributing to an increase in the recent sugar price.[ii]

Sugar consumption

Consumption of sugar in 2018/2019 was 173.95 million metric tons. The global consumption for 2019/2020 is expected to increase to 176.45 million metric tons. And further growth in consumption is expected, albeit slightly due to the growing awareness of health problems associated with excess sugar consumption.

Sugar Trading

The Sugar No. 11 contract is the world benchmark contract for raw sugar trading and is available on The Intercontinental Exchange (ICE). The size of each contract is 112,000 pounds.

White sugar is traded as Sugar No. 5, with a contract size of 50,000 metric tonnes. The US also trades in Sugar #16, with higher prices than sugar #11, due to subsidies and a tariff program that supports U.S. sugar farmers.

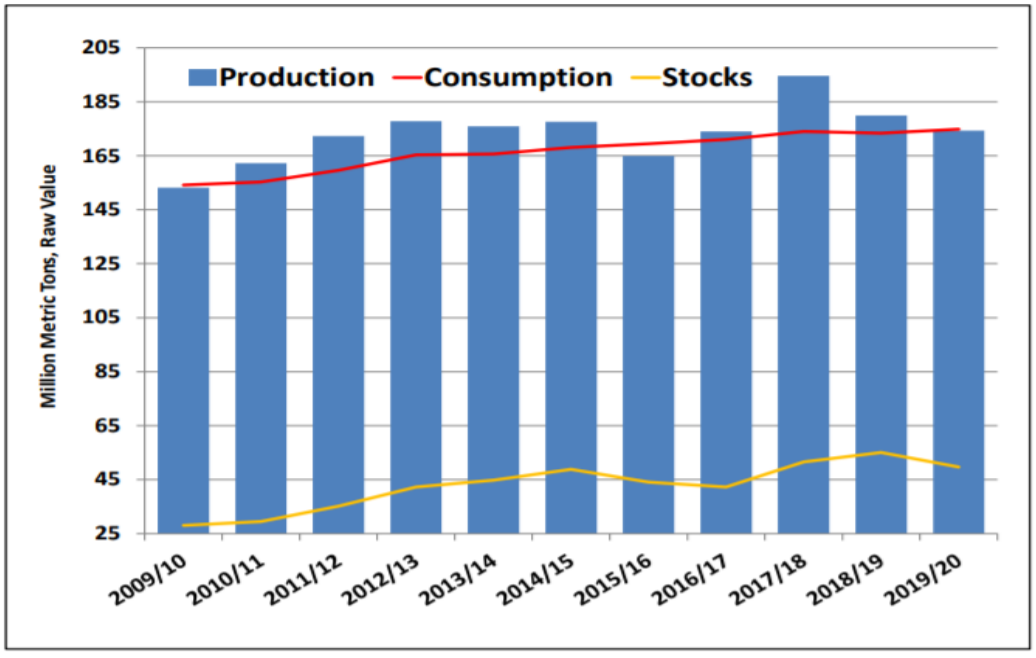

Figure 1: Sugar production and consumption – source USDA November 2019

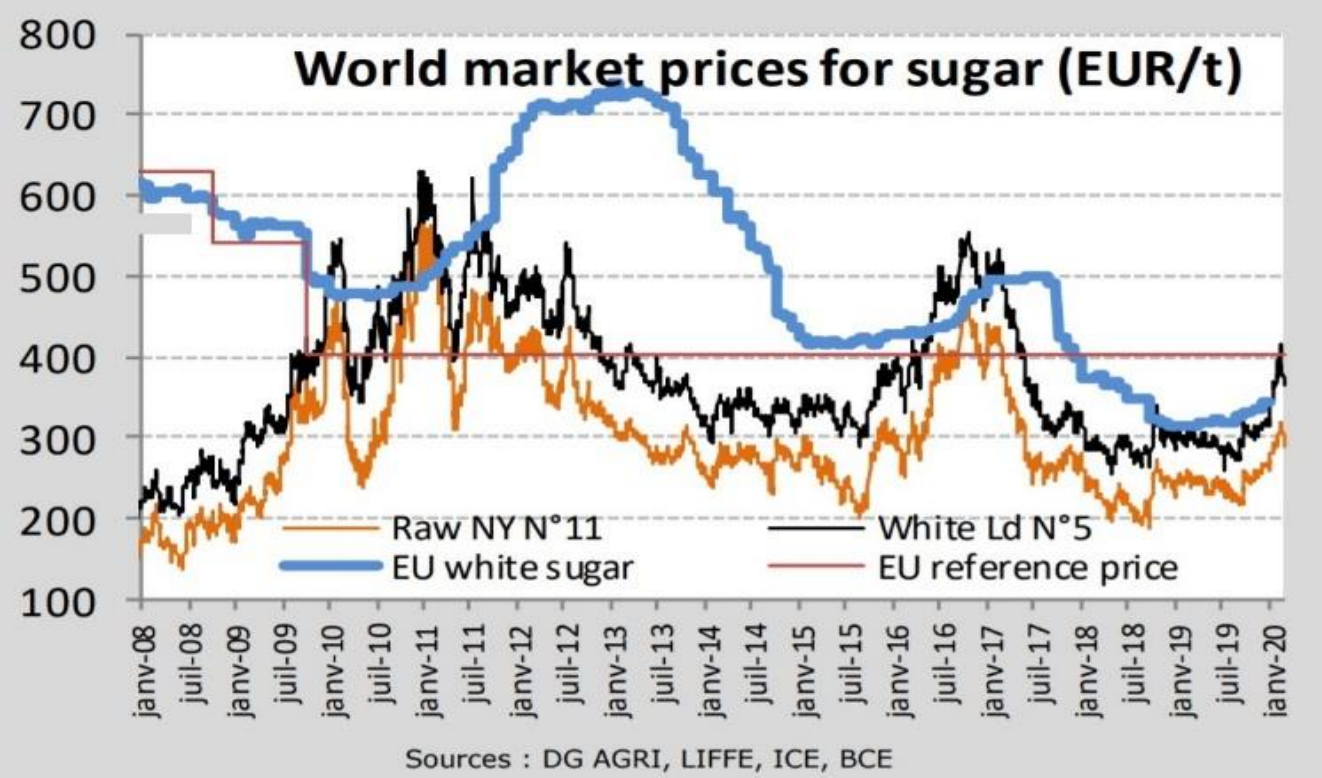

Figure 2: Sugar price development – source European Commission, February 2020

Sugar Price Development

Sugar prices are influenced by the following factors:

- ***Stock levels or inventory***. In general low levels of stocks indicate strong demand, weak supply or a combination of the two. Sugar has a long supply cycle, but can also be stored for a long time. If there are any problems here, this also has a significant effect on the price.
- ***Inflation of US Dollar***. There is a strong correlation as sugar is traded in US Dollars.
- Oil price. Brazil uses their sugar production mainly for ethanol, which is used as fuel in their vehicles. A decrease in oil prices will put pressure on the ethanol prices (and thus a decrease in sugar prices)
- ***Weather conditions***. Too dry or too wet – both are not good for the sugar harvest.
- ***Governmental regulations***. Change in tariffs or subsidies can have an influence on the price
- ***Consumption trends***. As already said, there is still growth, but this is likely to slow down due to health concerns.

High Volatility

Another factor that has to be taken into account is volatility.Volatility is not a standard percentage, it moves over time depending on how much and how quickly prices go up-and-down.

Over a period of 15 years, the average volatility of the nearby future sugar #11 was calculated at 31.5%. Currently the volatility is around 35%.

But what else do you need to know about this market? Although volatility is an important starting point for risk management, it is sometimes necessary to go back to the basics and pay attention to the following:

Some interesting facts on sugar trading	
Nearby future" of Sugar #11	
Highest price	35.31 ($cnt/Lbs) in Feb 2011
Lowest price	8.45 ($cnt/Lbs) in June 2007
Average price	16.46 $cnt/Lbs
Current price	11.04 $cnt/Lbs
Highest price increase in 24 hrs	1.84 $cnt/Lbs
Largest drop in prices in 24 hrs	– 3.45 $cnt/ Lbs
Average daily price change	0.26 $cnt/Lbs
> 35% of daily prices changes	> 0.26 $cnt/Lbs

Commodity Exposure

Suppose you have to buy, during 2021, an annual volume of 10,000MT of sugar. Your calculated cash flow based upon current market prices (prices taken 24th March 2020) would be EUR 2.3 million when delivery is spread during 2021.

What is the risk

If you do not hedge this "floating priced" position, your cashflow@risk (=CfaR) for 2021 can be presented as the potential cashflow difference between:

- Sourcing volume * (current market prices versus simulated market prices)
- KYOS calculated the current CfaR at EUR 1.3 million
- Enough reason to hedge?

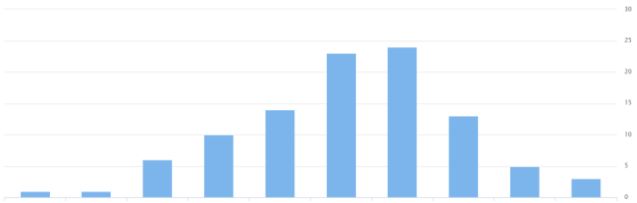

Figure 3 Distribution of cash flows - Source KYOS

Cashflow-at-Risk

For your cash flow this means that:

- With 95% certainty your cashflow will be lower than EUR 3.6 million
- Be aware that this is not the maximum

Value-at-Risk

For a short-term risk calculation (e.g. 1 day) you can use Value-at-Risk.

- Value@Risk: EUR 65,000
- With 95% certainty the potential total costs would stay below EUR 2.365.000 for this portfolio of 10,000MT sugar to be bought during 2021.

A holiday break of 10 days triples that potential price movement (=VaR) just below EUR 200,000 (95%).

With this information, you have determined your starting point for the desired hedging strategy. The final choice is yours but with these calculations, combined with your experience you are for sure better prepared to make your hedging decisions!

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 whom

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.

Interested to learn more? Contact us at info@kyos.com

[i] https://www.investopedia.com/articles/investing/101615/5-countries-produce-most-sugar.asp
[ii] https://insights.abnamro.nl/2020/01/extremer-weer-teistert-grondstofmarkten/