Insight in Risks
January 2020

How to use historical volatility of coffee prices like Arabica and Robusta to estimate your cashflows

World coffee production

There are two varieties of coffee beans: arabica and robusta. Arabica accounts for 75% of the world's production, robusta for 25%. Brazil is the main producer of arabica, and also the largest exporter supplying 40% of the global demand. Colombia is the second producer of arabica beans. Robusta is cultivated in Vietnam (15% of global supply) and Indonesia. Other exporting countries of coffee beans are Peru, India, Uganda, Ethiopia, Mexico and Cote Ivoire.

Generally speaking, Europe prefers the robusta bean. It is also the bean used for espresso's. The United States favor arabica. Both coffee bean varaties are traded on the ICE.

According to a recent report published by the United States Department of Agriculture (USDA)[i], the world coffee production for 2019/20 is forecast to be 5.3 million bags (60 kilograms) lower than the previous year to 169.3 million, primarily due to Brazil's Arabica trees entering the off-year of the biennial production cycle.

Consumption however, is likely to hit an alltime high of 166.4 million bags. Driving this spike in consumption is Asia, with a staggering growth of 240% over the last 15 years. In comparison, Europe grew by 5%, the US by 8%.[ii] Although the average consumption per head in Asia is still below that of Western Europe, the expectation is that they will catch up quickly.

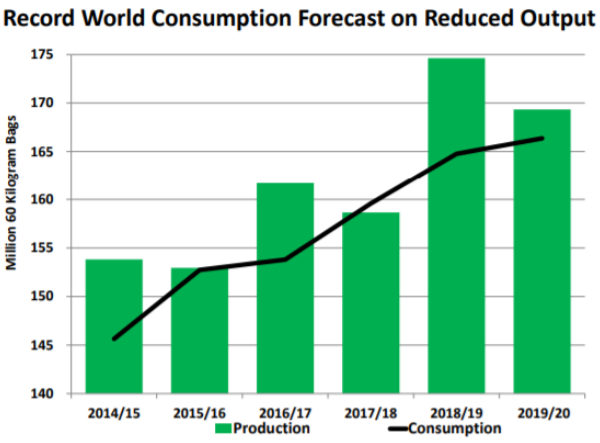

Figure 1: Coffee consumption – source USDA December 2019

As already mentioned, Brazil will see an "off year" in production for 2019/2020, which will lead to lower inventories. Together with an increasing demand, will this lead to price increases? It will be interesting to follow,as after an increase in December 2019, the prices in January 2019 dropped.

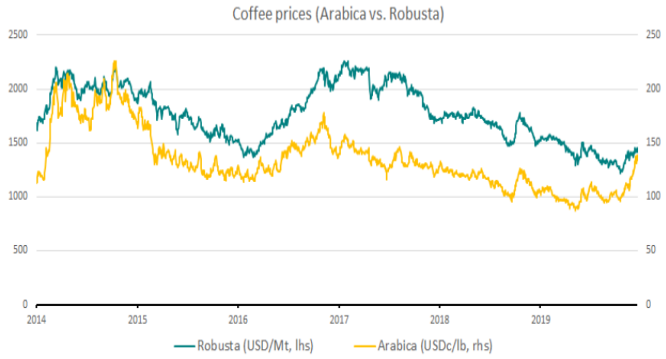

Figure 2 Price development coffee – ABN AMRO, January 2020

High Volatility

Volatility is not a standard percentage, it moves over time depending on how much and how quickly prices go up-and-down. At the end of 2019, volatility of coffee prices was at a record high at 45% for the March'21 arabica future. That level of volatility has ocurred earlier in 2015.[iii] Over a trading period of 2 years, the average volatility of the March'21 arabica future was calculated at 22%.

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 coffee trading	
	Arabica
Largest rise in 24 hrs	7.50 $cnts/Lbs
10% of all price changes	> 3.00 $cnts/Lbs
AVG daily price change	1.45 $cnts/Lbs
Highest price traded	154.80 $cnts/Lbs

KYOS

Commodity Exposure

Suppose you have to buy, during 2021, an annual volume of 10,000MT Arabica coffee. Your calculated cash flow based upon current market prices (prices taken 24th Jan 2020) would be around EUR 24.1 million for delivery in 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 13.7 million
- Enough reason to hedge?

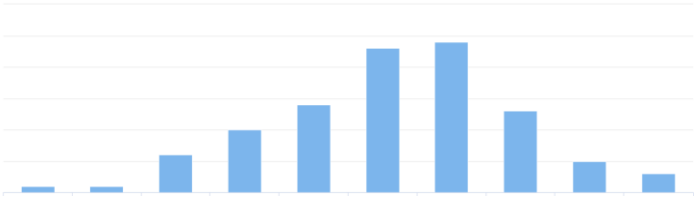

Figure 3 Distribution of cash flows - Source KYOS

Cashflow-at-Risk

For your cash flow this means that:

- With 95% certainty your cashflow will be lower than EUR 37.8 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. With 95% certainty the potential price change (up/down) will not be bigger than EUR 630.000 for this portfolio of 10,000MT Arabica coffee to be bought during 2021.

A holiday break of 10 days triples that potential price movement just above EUR 2 million.

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 clients to have an independent MtM. It also enables clients to play with the strikes to find the optimum.

KYOS adds value

To help you understand these price risks and improve your cash flow prediction, KYOS has developed risk management software to effectively manage your 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://usda.library.cornell.edu/concern/publications/m900nt40f?locale=en
[ii] https://insights.abnamro.nl/2019/12/spektakel-in-de-koffieprijs/
[iii] https://www.bloomberg.com/news/articles/2019-12-24/coffee-s-surprise-rally-leaves-traders-guessing-on-2020-outlook

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