European Jet Fuel Index: Methodology

Abstract

Current methods employed by airlines to hedge their fuel requirements are inadequate in their purpose to reduce basis risk. This document considers other available contracts, their traded volume, and data from the EIA concerning regional jet fuel demand, in order to determine their viability and suitability for use in a hedging index. The Onyx European Jet Fuel Benchmark uses a basket of contracts which provides a more comprehensive and basis-reducing method for airlines in the European region to hedge.

Introduction

Fuel costs are am airlines biggest single cost, contributing up to 60% of total costs. This is a hugely volatile part of their balance sheet and close consideration must be taken for fuel price risk management when setting strategic goals. In Europe, airline companies frequently hedge using Brent crude futures to hedge their jet fuel consumption, as crude is the source of jet price and the prices of the two are normally positively correlated and offers greater liquidity than straight Jet Fuel flat price contract. However, this leaves open to a great deal of basis risk as the crack (the difference between crude and jet fuel prices) is a volatile differential. In recent years we have seen this as high as $23 and as low as -$13 which is effectively unhedged by trading Brent futures alone. Airlines therefore require a more accurate hedge that also offers them the liquidity to execute a basis limiting hedge in an efficient manner in order to minimise costs. The Onyx European Jet Fuel Benchmark offers that solution.

Many may find themselves in a difficult position to hedge, as airline do not have the in-house expertise to analyse the crude or jet fuel markets and structure efficient hedging programs that mimic their physical exposure accurately. This leads them to either pay unnecessarily high costs for structures that have excessive basis risk or avoid hedging completely which leaves them fully exposed to oil price volatility.

Onyx believes that a perfect hedge cannot be solely reliant on crude as a hedging instrument as it is subject to many factors, such as macro events, unpredicted outages and geo-political tensions, which are impossible to predict to a certain degree. Therefore, the more educated method would be to utilise a practical and demand-based solution and devise a hedging index that airline companies can rely on. The Onyx European Jet Fuel Benchmark was created to offer airlines an efficient solution for fuel price risk management whilst giving boards previously inaccessible price transparency over the jet fuel market.

Proposal

European Jet fuel pricing index = 72% × CIF NWE Jet fuel + 28% × Med FOB Jet fuel

Justification

There are several products that are traded on exchanges such as the Intercontinental Exchange (ICE) or the Chicago Mercantile Exchange (CME). **Table 1** shows the relevant contracts that could be used for jet fuel hedging:

Table 1

No	Product Name
1	Jet fuel diff - Jet CIF NWE vs low sulphur gasoil 1st line
2	Jet fuel diff - Jet ROB Rotterdam vs jet CIF NWE
3	Jet fuel NWE future
4	Jet CIF NWE cargo vs Brent 1st line
5	Jet fuel Rotterdam barges
6	Jet fuel Med FOB vs CIF NWE
7	Jet fuel diff- Jet FOB Rotterdam vs low sulphur gasoil 1st line
8	Jet fuel Med FOB

Source: ICE

Bloomberg was used to source historic data from 2015 onwards for the ICE traded exchange products listed in **Table 1** and the aggregated volumes and open interests dated to Nov 19, 2019 were calculated, as shown in **Table 2**.

Table 2

No	Contract Name	Volumes	% of volume	Open interest	% of open interest
1	Jet fuel diff- Jet CIF NWE vs low sulphur gasoil 1st line	506,482	90.5%	25,035,223	82.3%
2	Jet fuel diff- Jet FOB Rotterdam vs jet CIF NWE	17,332	3.1%	2,464,063	8.1%
3	Jet fuel NWE future	9,759	1.7%	623,311	2.0%
4	Jet CIF NWE cargo vs Brent 1st line	22,192	4.0%	2,003,893	6.6%
5	Jet fuel Rotterdam barges	248	0%	39,730	0.1%
6	Jet fuel Med FOB vs CIF NWE	3,411	0.6%	193,245	0.6%
7	Jet fuel diff- Jet FOB Rotterdam vs low sulphur gasoil 1st line	276	0%	45,657	0.2%
8	Jet fuel Med FOB	672	0.1%	24,295	0.1%

Source: Bloomberg, ICE

Table 2 shows that 96.2% of the total traded volumes and 92.4% of the open interest were across the following 3 products:

1) Jet fuel diff-Jet CIF NWE vs low sulphur gasoil 1st line
2) Jet CIF NWE cargo vs Brent 1st line
3) Jet fuel NWE future

They are all priced off Jet fuel CIF NEW based contracts. The Jet Med related contracts only account for 0.7%.

If the volume weighting were used to produce the pricing index for jet fuel, the formula would weigh very heavily towards the CIF NWE jet fuel and would put little weighting on the Med jet fuel. The pricing formula would be:

European Jet fuel pricing index = 96% × CIF NWE Jet fuel + 4% × Med FOB Jet fuel

This formula may not be accurate if the demand from the Med region and North-West Europe is factored in.

Data was collected from the Energy Information Administration (EIA), an independent statistical agent, as it is an unbiased and reliable source. As the Med regions are the main buyers of physical jet fuel oil, the Med consumption data from 2015 and 2016 [(2)] was collected. This data and IHS Markit's predicted level of demand growth data from 2017 to 2020, was used to gauge how much demand has changed over the years. According to their research, the demand growth was at 1.4% for European countries, and 2.1% for African countries [(3)]. As their data was shown without a country by country breakdown, data was found for the real consumption for jet fuel and projected levels between 2017 till 2020. This is shown in Table 3.

Table 3 (grey areas are predicted levels)

Country	Consumption kb/d					
	2015	2016	2017	2018	2019	2020
Turkey	100	100	100	106	107	109
Morocco	14	14	14	14	15	15
Algeria	13	11	11	11	12	12
Tunisia	4	5	5	5	5	5
Libya	1	1	1	1	1	1
Egypt	24	24	25	25	26	26
Spain	120	127	138	144	146	148
Portugal	25	27	31	33	33	34
Italy	84	87	90	104	105	107
Greece	24	25	28	30	30	31
Croatia	3	3	3	3	3	3
Cyprus	5	6	6	6	6	6
Lebanon	5	5	5	5	5	5
Israel	19	20	22	24	24	25
Syria	1	1	1	1	1	1
Med Total	442	456	480	514	521	529
European Med Total	361	375	396	426	432	438
Europe total Med + CIF	1461	1493	1514	1535	1557	1579
CIF Total	1100	1118	1117.744	1108.526	1124.51	1140.451

Source: EIA, IHS Markit

Explanation of totals:

1) Med total = Sum of consumption for all countries in Mediterranean region.

2) European Med total = Sum of consumption for all European countries in Med region

3) Europe Total (Med + CIF) = Sum of consumption for all European countries

4) CIF Total = Sum of consumption for all CIF region countries, calculated by subtracting European Med total from Europe Total (Med + CIF)

Table 4: (grey areas are predicted levels)

Total	**Consumption kb/d**					
	2015	**2016**	**2017**	**2018**	**2019**	**2020**
Med Total	442	456	480	514	521	529
CIF Total	1314	1323	1326	1319	1338	1357
Ratio CIF/Med	2.97	2.90	2.76	2.57	2.57	2.57

Table 4 shows that the demand ratio between the CIF NWE jet fuel and the Med jet fuel is roughly 2.57:1, which means that the demand weighting will be 72% vs 28%.

Therefore, after adjusting the weighting based on demand, the following pricing index was produced:

European Jet fuel pricing index = 72% × CIF NWE Jet fuel + 28% × Med FOB Jet fuel

This formula is more reflective of the actual demand and serves as a superior hedging instrument for airlines.

Conclusion

In conclusion, this document discusses the need for a better hedging strategy for airline companies in order to better hedge their European fuel costs and compared the volume-based pricing strategies with the demand weighted method. The latter would be more reflective of what airlines have been looking for years, to find a good proxy to lock in their fuel costs.

References

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2. *Government Data: Consumption - US Energy Information Administration (EIA)* https://www.eia.gov/opendata/qb.php?category=2135044

3.Louise Vertz, Sandeep Sayal (January, 2018), *Long-Term Jet Fuel Outlook* https://cdn.ihs.com/www/pdf/Long-Term-Jet-Fuel-Outlook-2018.pdf

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