Danske Bank

Danske Bank FX School

19 August 2020

FX Structuring:

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Agenda

Part 1: Currency hedging: Why and how?

Part 2: Hedge instruments and how to use in practice

Part 3: Accounting and currency hedging

Part 2: Hedge instruments and how to use in practice

- Introduction to FX options
- Options versus FX forwards
- Danske Bank's Hedge Instrument Guide

Currency options – what is it?

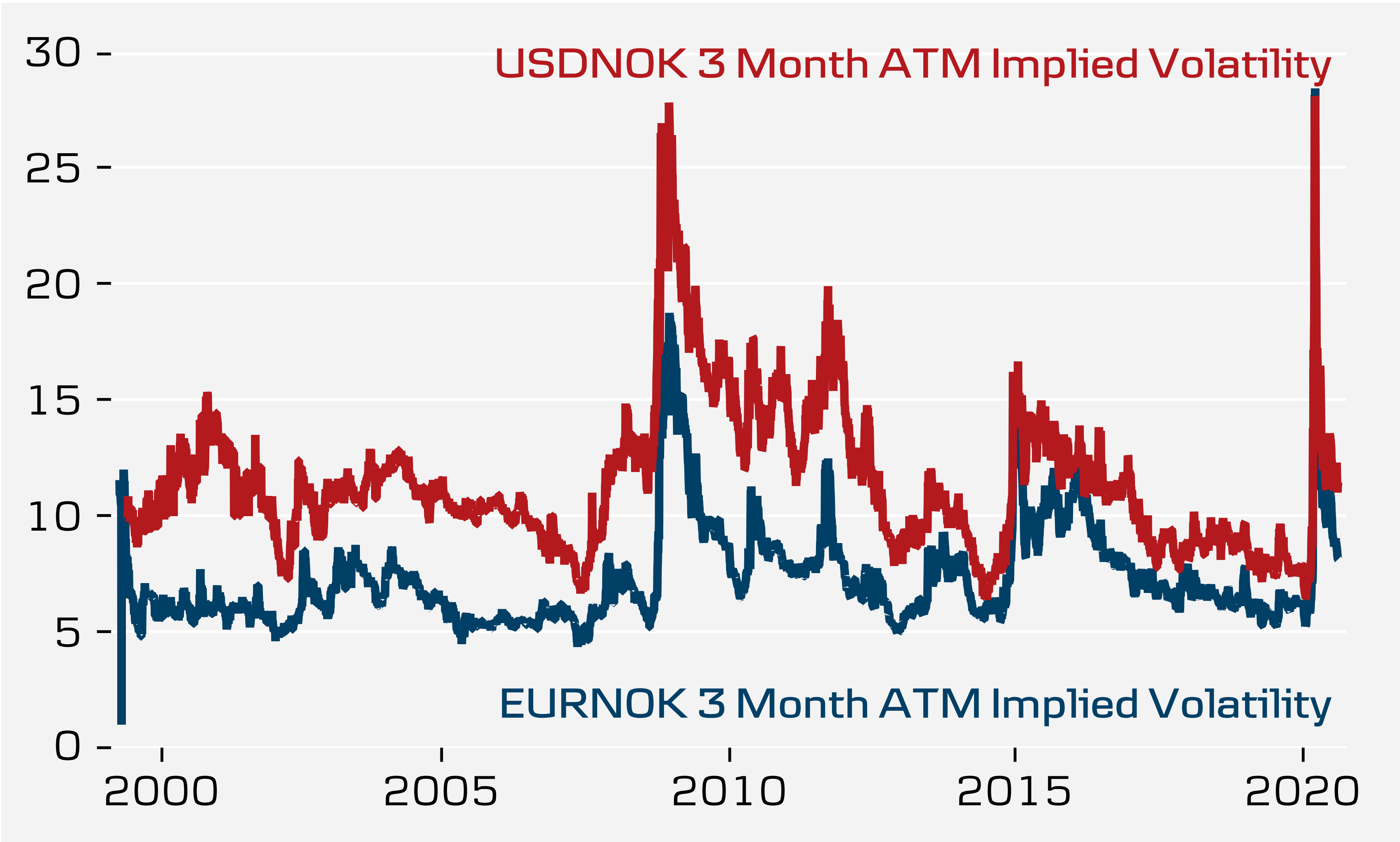
- A currency options gives the buyer a **right**, but not an **obligation** to exchange a predefined amount at a predefined exchange rate (strike) on a specific day. In order to obtain this right, the buyer pays a premium to the seller of the option.

- You can regard a bought option as an insurance against unfavourable currency movements. It will provide you with a worst case scenario, just as a regular insurance.

- The premium is determined by the strike, the forward rate, and the market volatility.

	Call option	Put option
Buyer of option	Right, but not obligation to buy	Right, but not obligation to sell
Seller of option	Obligation to sell	Obligation to buy

The price of options – Implied volatility



Source: MacroBond & Bloomberg

Example – company with costs in EUR

Buy a 3 month EUR/NOK call option:

Buys the right to buy 100.000 EUR/NOK in 3 months at rate 10.70

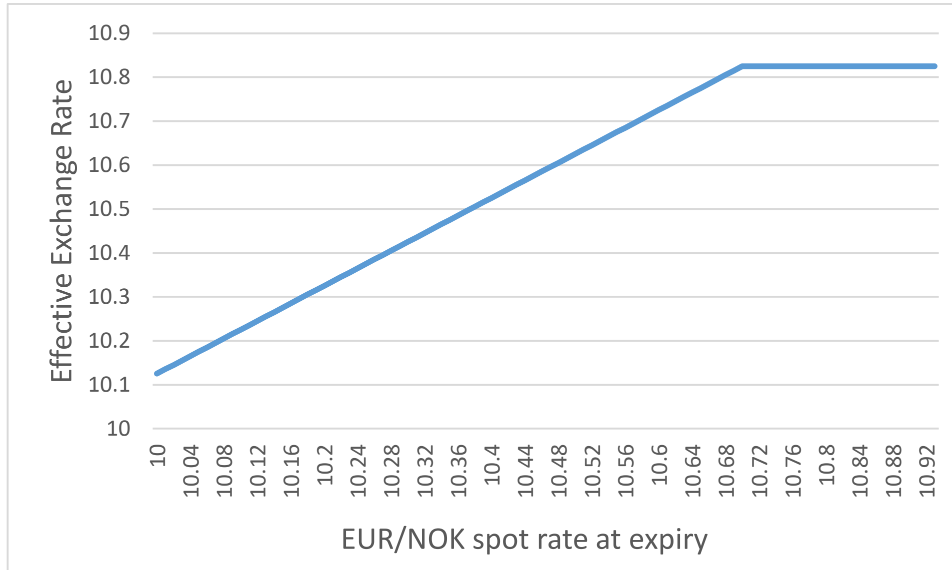
Option cost a premium of 0.1250 points (12.500 NOK per 100.000 EUR notional)

Full protection above 10.70

Worst case effective rate = 10.70 + 0.1250 = 10.8250

No obligations (full profit potential) if spot rate declines.

Worst case loss is the premium paid

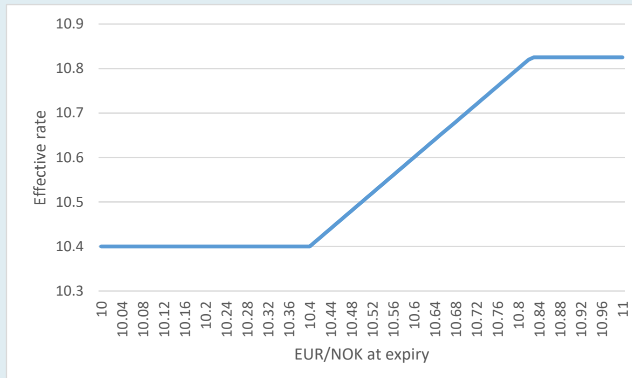


Source: Danske Bank

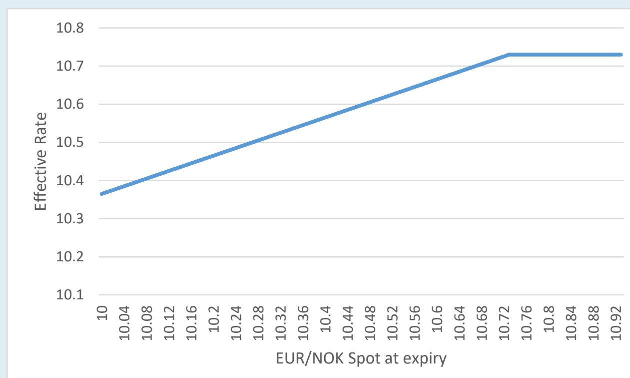
Reducing premium cost, by combining options

Premium cost can be reduced or eliminated by combining call/put options
Examples (6 month strategies):

- Risk Reversal:
  - Buy a call option to hedge currency expenses
  - Sell a put option, that finances the call option, but caps your gain
  - Fully hedged above 10.8250
  - Full participation down to 10.4000
  - Zero Cost



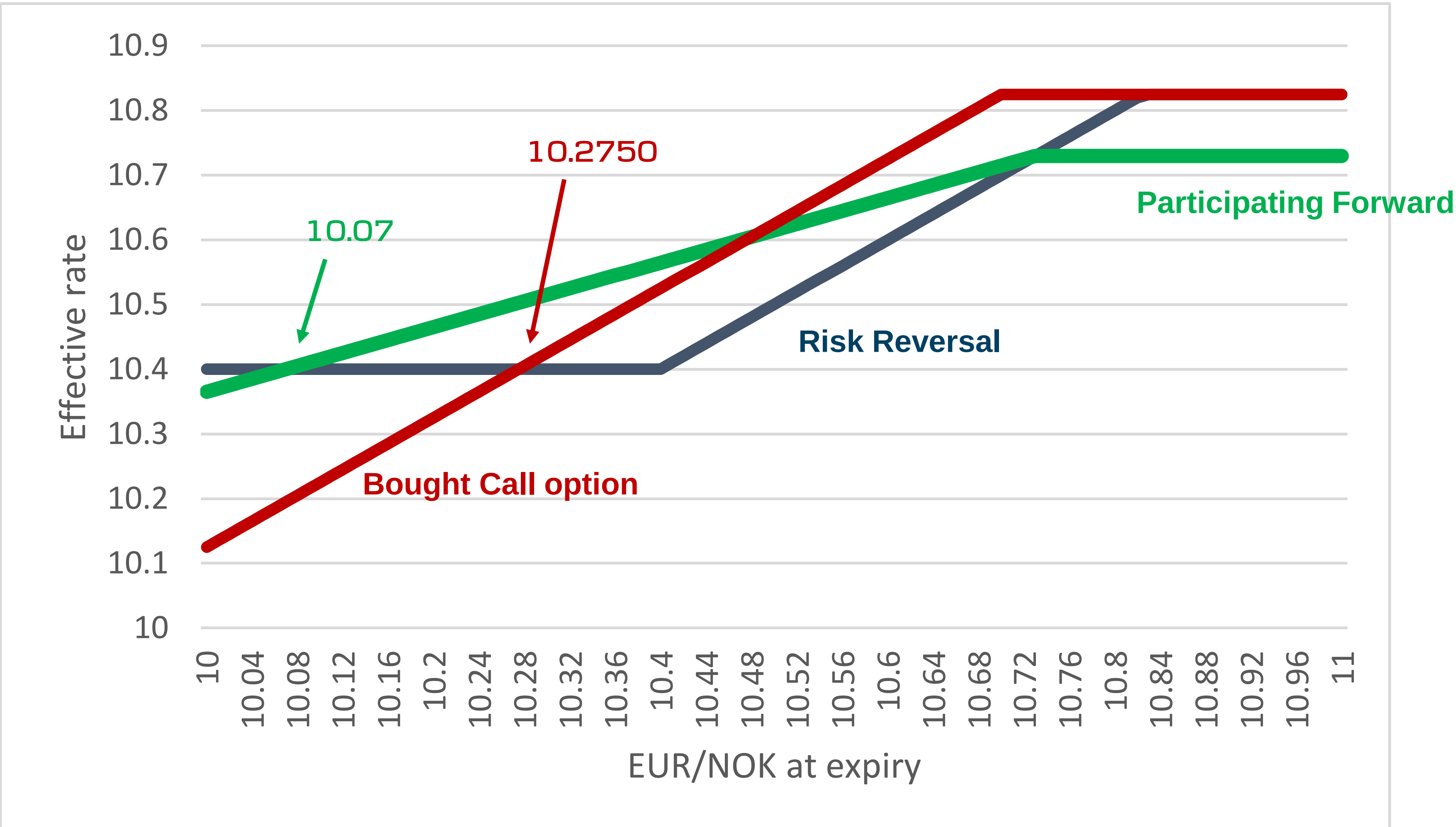
- Participating Forward:
  - Buy a call option to hedge currency expenses
  - Sell a put option in 50% of the call notional, that finances the call option, but allows unlimited market participation in remaining 50% notional
  - Full hedge above 10.73
  - 50% unlimited participation below 10.73
  - Zero Cost



	Call option	Put option
Buyer of option	Right, but not obligation to buy	Right, but not obligation to sell
Seller of option	Obligation to sell	Obligation to buy

Source: Danske Bank

Comparison of the strategies



Source: Danske Bank

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Why use options

- **Uncertainty in cash flow**
  - In case it is difficult to predict cash flows, you are forced to maintain a low hedge ratio if you use forwards only, as there might be a risk of over hedging. Use less-committing options to maintain a high hedge ratio.

- **If Carry cost is high, so the forward transaction seems unattractive**
  - In case the interest rate difference becomes very high, it might be a good idea to use an option contract, where there is a chance you will not have to realize the carry cost.

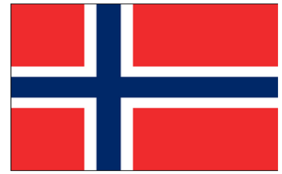
- **Market level is unattractive**
  - In case your hedging policy requires you to hedge now, but the market is not favourable, you can use options to participate in a favourable market move.

- **Other considerations when hedging with options**
  - A flexible hedge mandate with the opportunity to both sell and buy options adds more dimension in relation to optimizing cost.
  - Active risk management: it is rarely optimal to hold options until maturity

When is Forward hedging (carry) expensive?

Carry trades: high yield is like candy for speculators

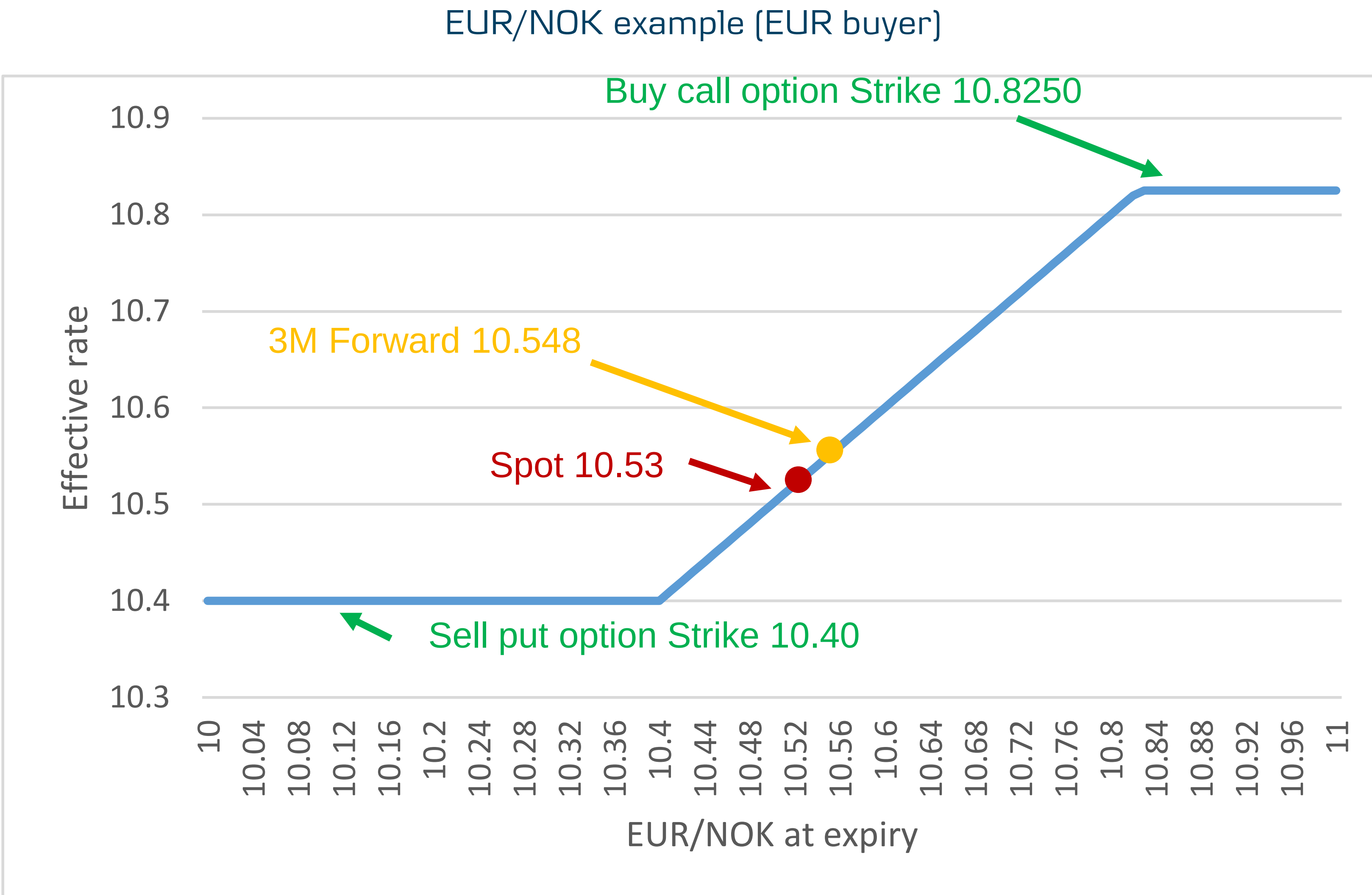
- Carry trade is a well know investor strategy
- An attempt to systematically earn the interest rate differential between currencies (countries):
  - Buy high yielding currency
  - Sell low yielding currency
- You will gain as long as the high yielding currency doesn't depreciate as much as the interest rate parity suggest.
- Systematic risk premium?



+0.15%

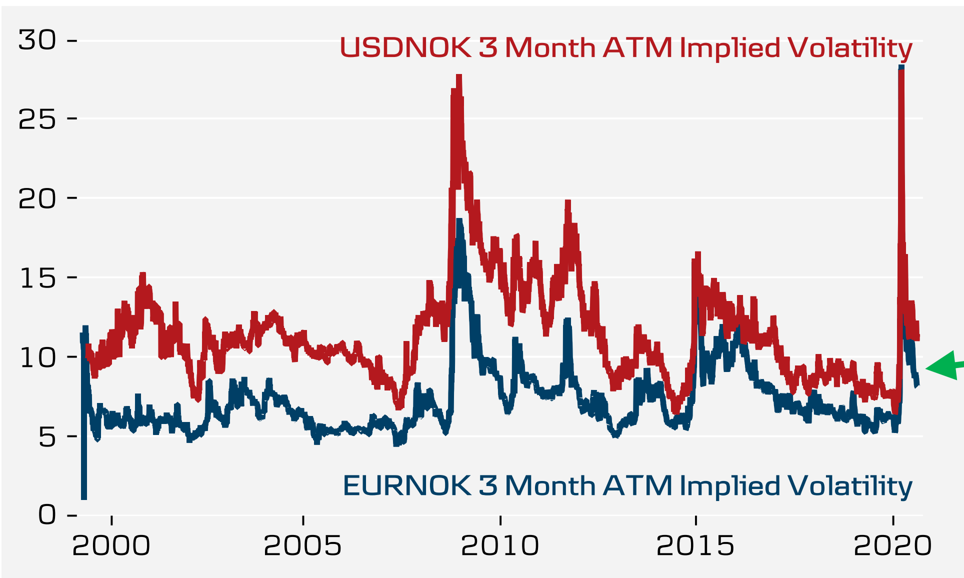
-0.55%

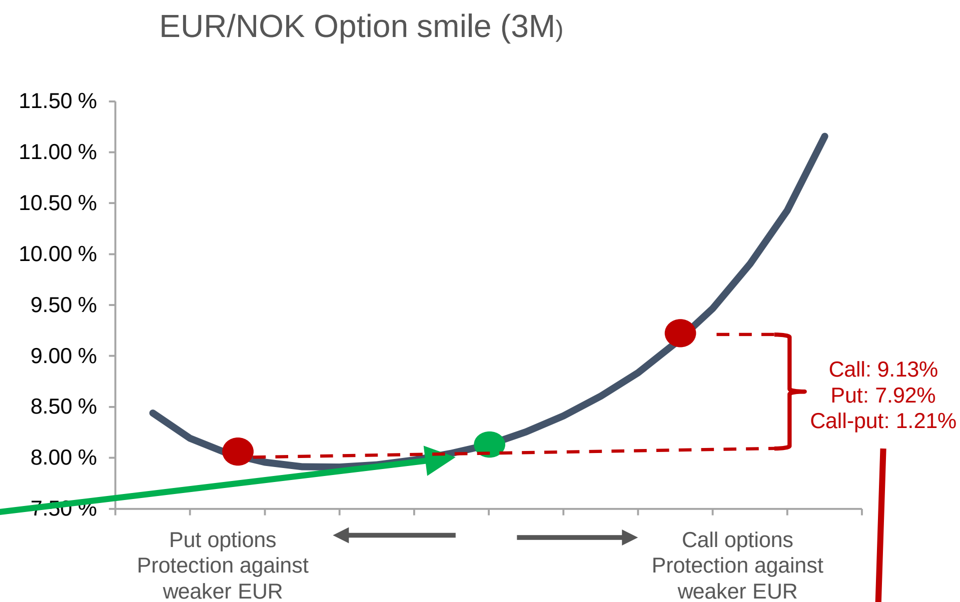
Example:
Risk Reversals (options) versus FX Forward

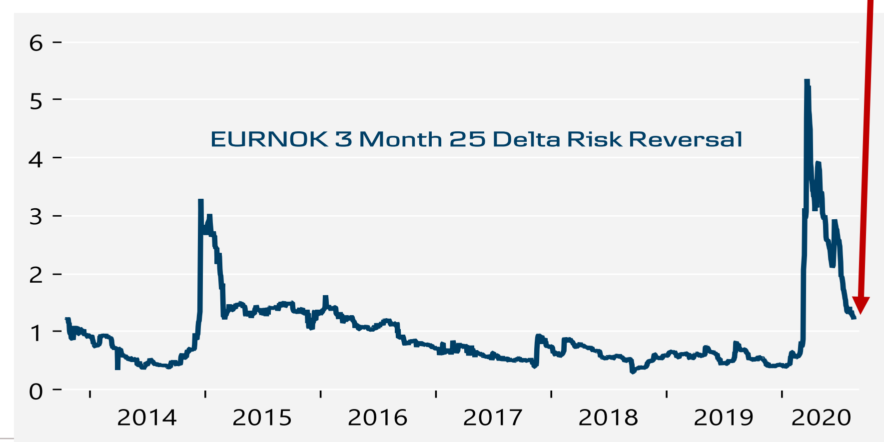


Source: Danske Bank

Risk Reversal – difference between put and call options







Source: MacroBond & Bloomberg

Example:
Simulating and testing performance: EUR buyer

Source: Danske Bank & Bloomberg

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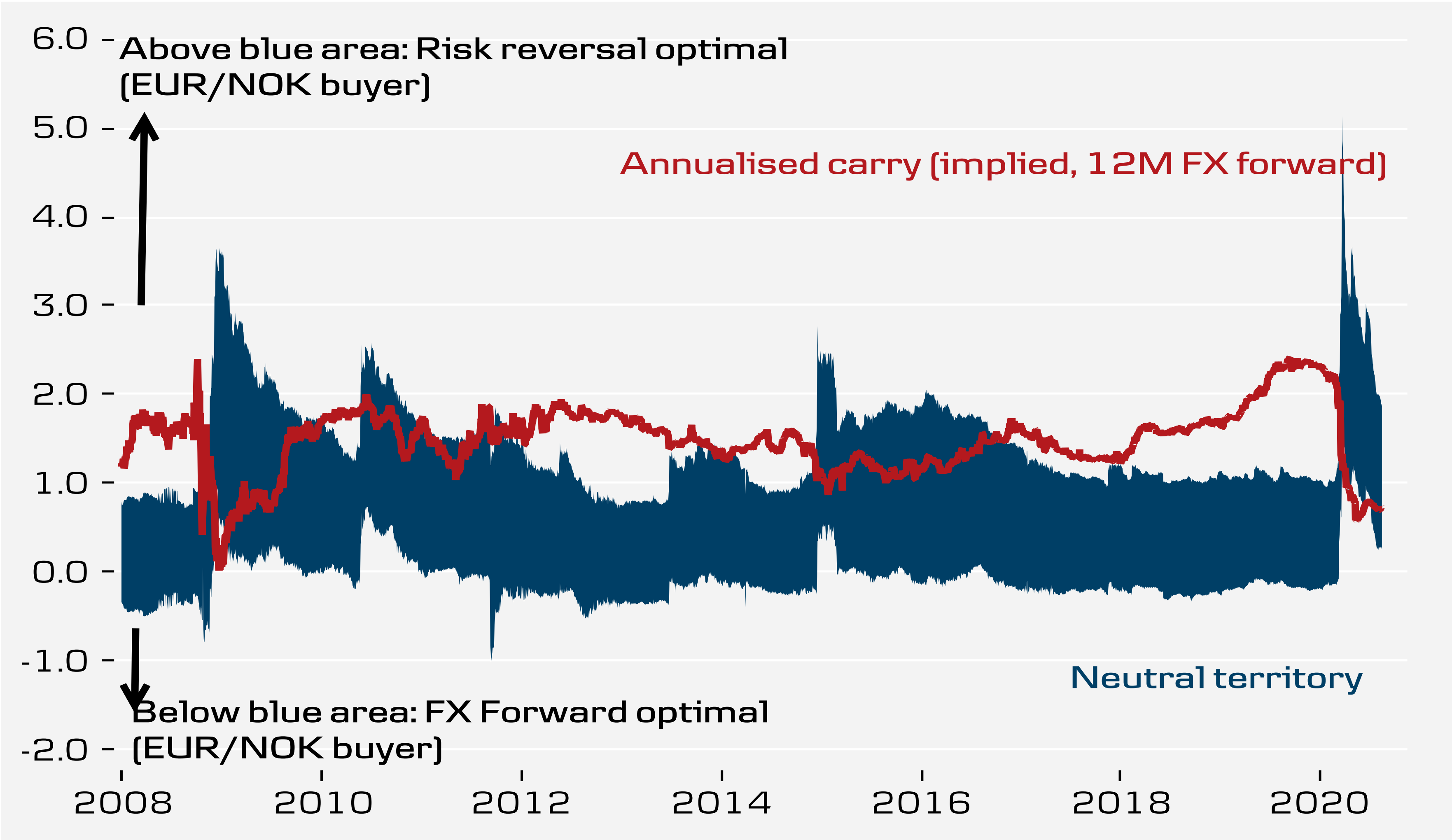
IMPORTER (EUR buyer)

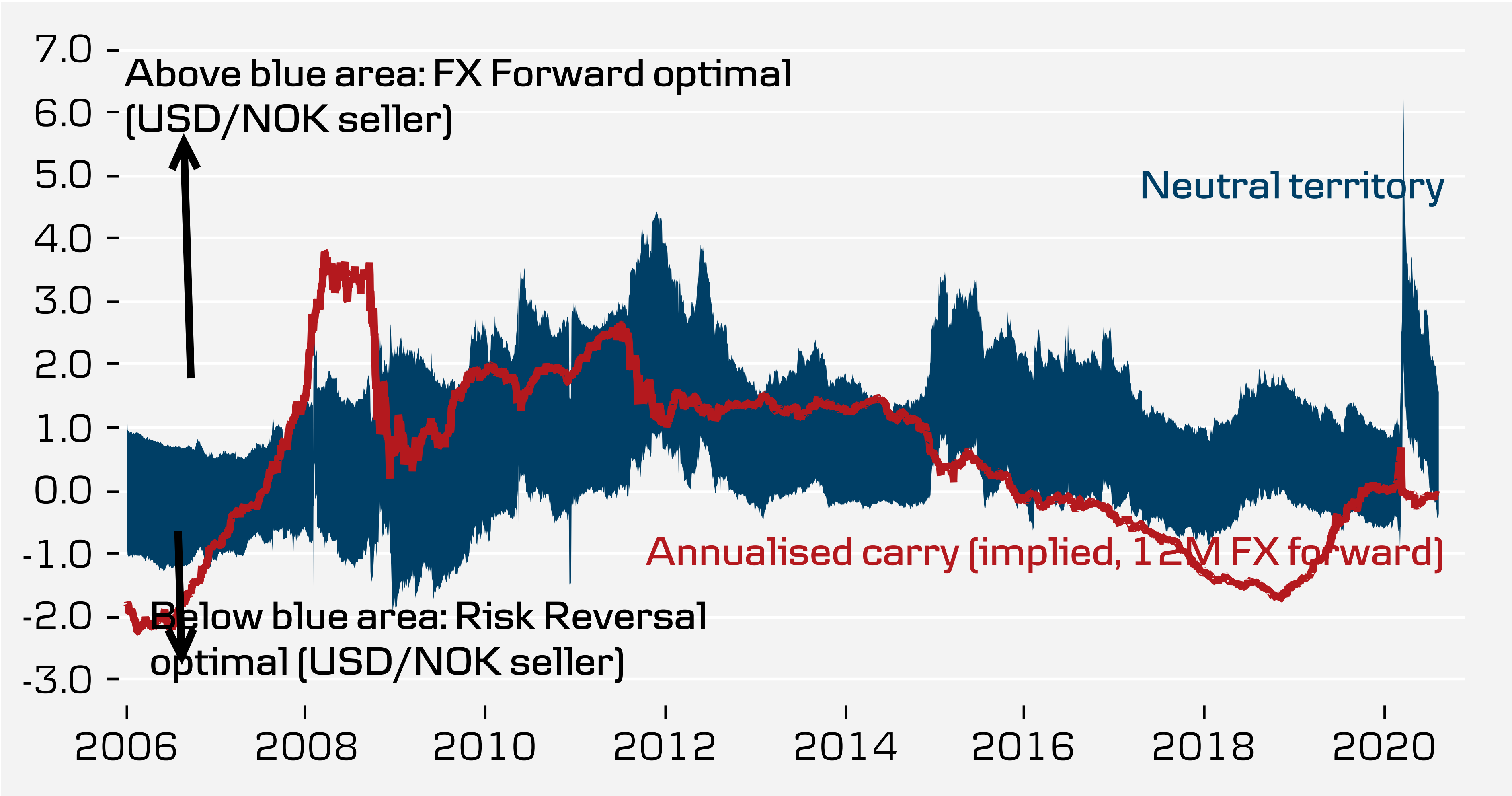
"The rule": EUR/NOK Buyer (1Y tenor)



Source: MacroBond & Bloomberg

EKSPORTER (USD buyer)

"The rule": USD/NOK seller (1Y tenor)



Source: MacroBond & Bloomberg

Hedge Instrument Guide

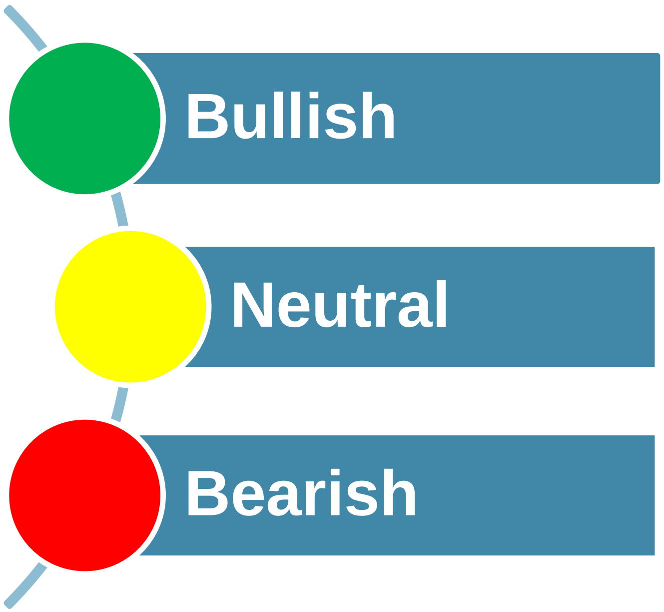
Find the optimal hedging instrument based on carry and volatility

Change in market – change in instrument

Not one hedging instrument is suitable under all market conditions

Choice of Hedging Instrument (Currency Seller)

Spot View



Hedge Ratio	Carry Cost	Instrument
Low	Expensive	Options
	Neutral	Options
	Cheap	Options/FX Forward
Medium	Expensive	Options
	Neutral	FX Forward
	Cheap	FX Forward
High	Expensive	FX Forward/Options
	Neutral	FX Forward
	Cheap	FX Forward

Choice of Hedging Instrument (Currency Buyer)

Spot View

- Bullish
- Neutral
- Bearish

Hedge Ratio	Carry Cost	Instrument
High	Expensive	FX Forward/Options
	Neutral	FX Forward
	Cheap	FX Forward
Medium	Expensive	Options
	Neutral	FX Forward
	Cheap	FX Forward
Low	Expensive	Options
	Neutral	Options
	Cheap	Options/FX Forward

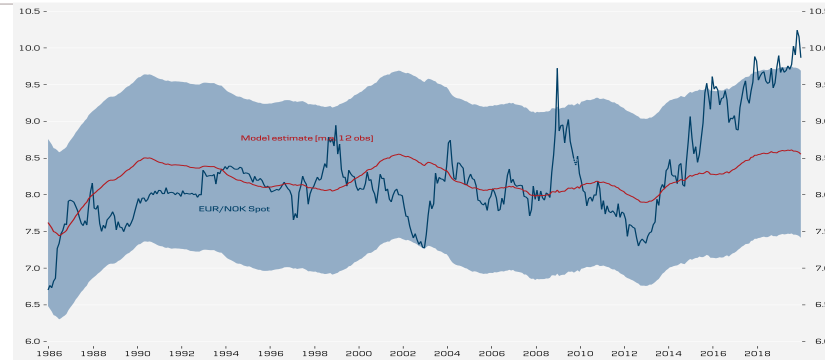
Which instrument to use?

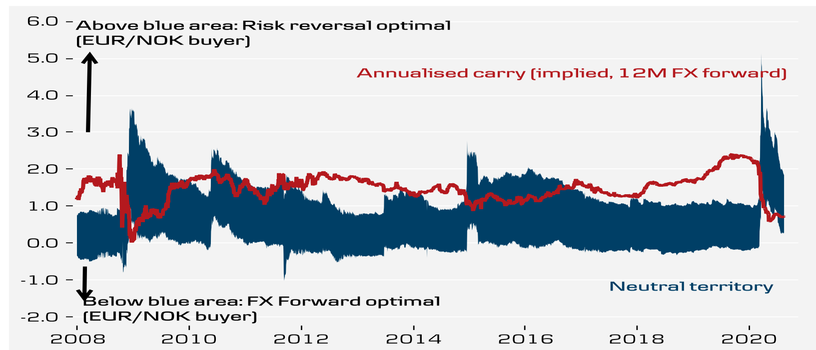
EUR Seller

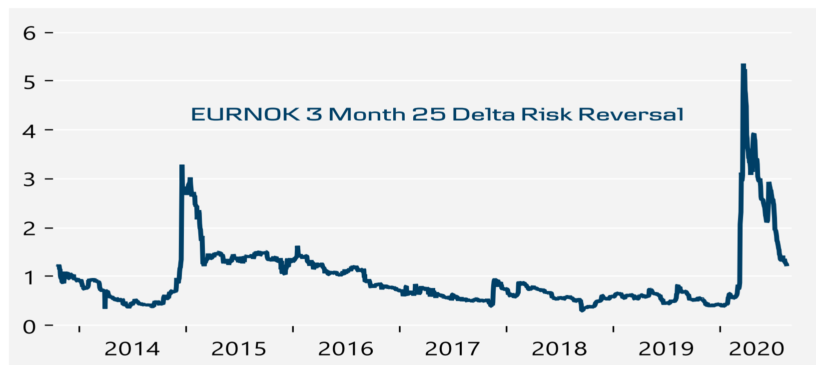
- Spot is expensive
- Receive carry
- Skew is favorable for EUR

EUR Buyer

- Spot is expensive
- Pay carry
- Skew is unfavorable for EUR







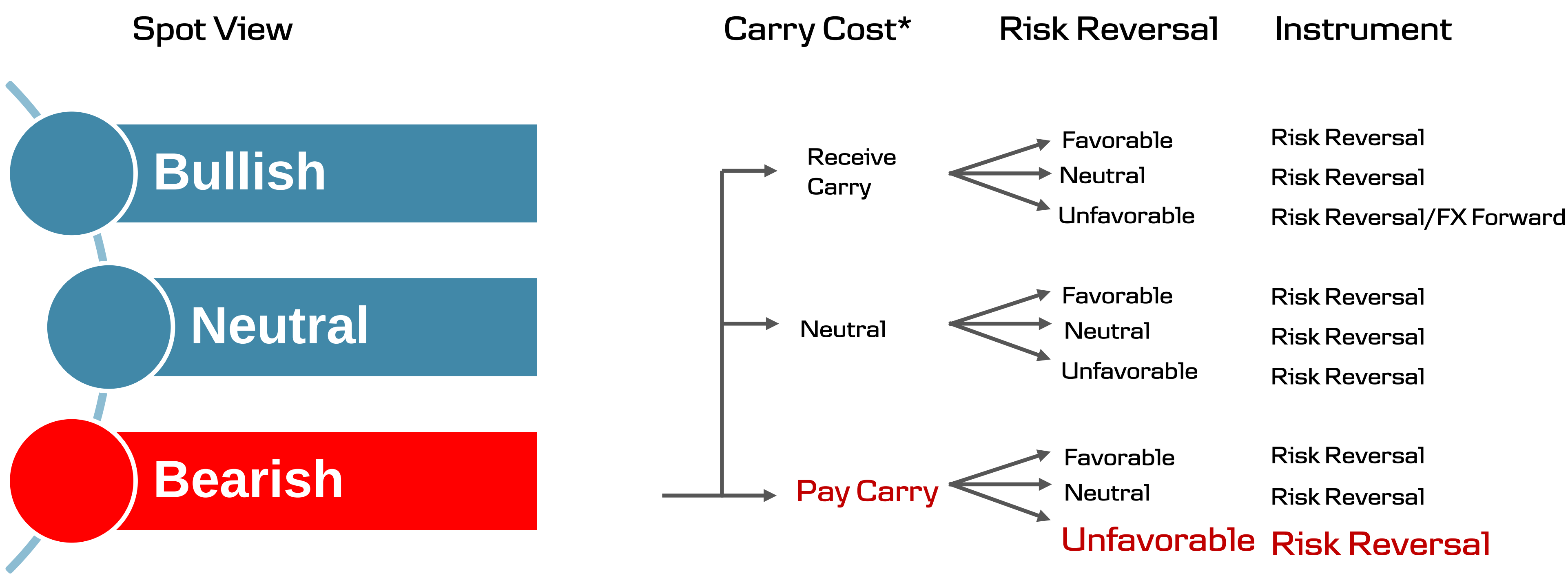
Source: MacroBond & Bloomberg

Choice of Hedging Instrument – Bearish View (EUR Seller)

Spot View	Carry Cost*	Risk Reversal	Instrument
Bullish			
Neutral			
Bearish	Receive Carry	Favorable	FX Forward
		Neutral	FX Forward
		Unfavorable	FX Forward
	Neutral	Favorable	FX Forward
		Neutral	FX Forward
		Unfavorable	FX Forward
	Pay Carry	Favorable	Risk Reversal/FX Forward
		Neutral	FX Forward/Risk Reversal
		Unfavorable	FX Forward/Risk Reversal

* You can use Danske Banks ”Carry/Risk Reversal” analysis”

Choice of Hedging Instrument – Bearish View (EUR Buyer)



* You can use Danske Banks "Carry/Risk Reversal" analysis"

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Summary

- **Know your risk!**
- **Strong financial policy which is aligned with overall business objectives**
- **The choice of hedge instrument (Forwards versus options) depends (among others) on:**
  - Your business
    - Cash uncertainty
    - Nature of business and cash flow
    - Competition
  - Market conditions
    - Carry (interest rate differential)
    - Volatility

Next time – Part 3: Accounting and currency hedging by Arne Kristian Hokholt

Questions?

General Disclaimer