

# Danske Bank FX School

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**FX Structuring:**

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## Agenda

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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

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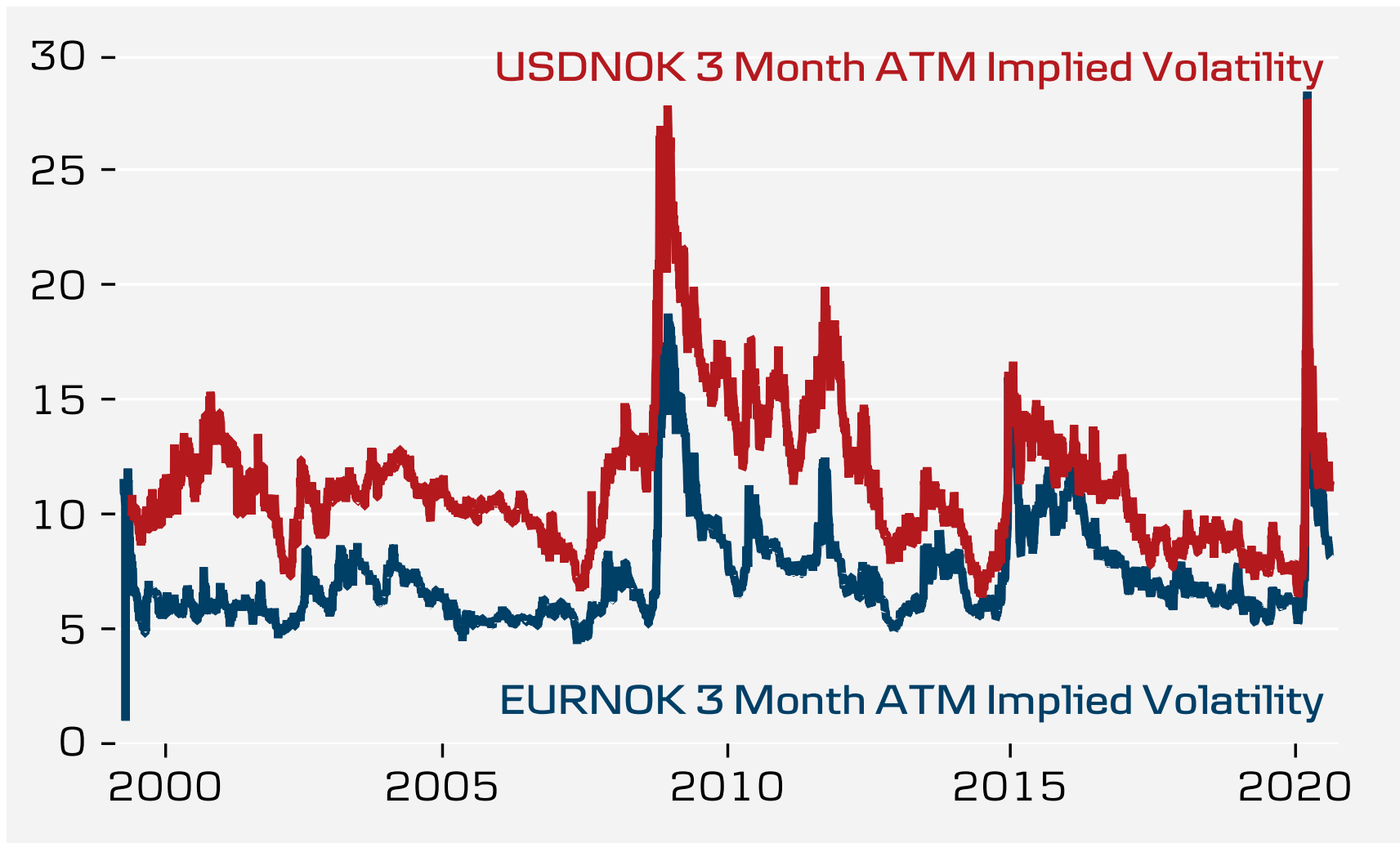
- Introduction to FX options
- Options versus FX forwards
- Danske Bank's Hedge Instrument Guide

## 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



## 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*

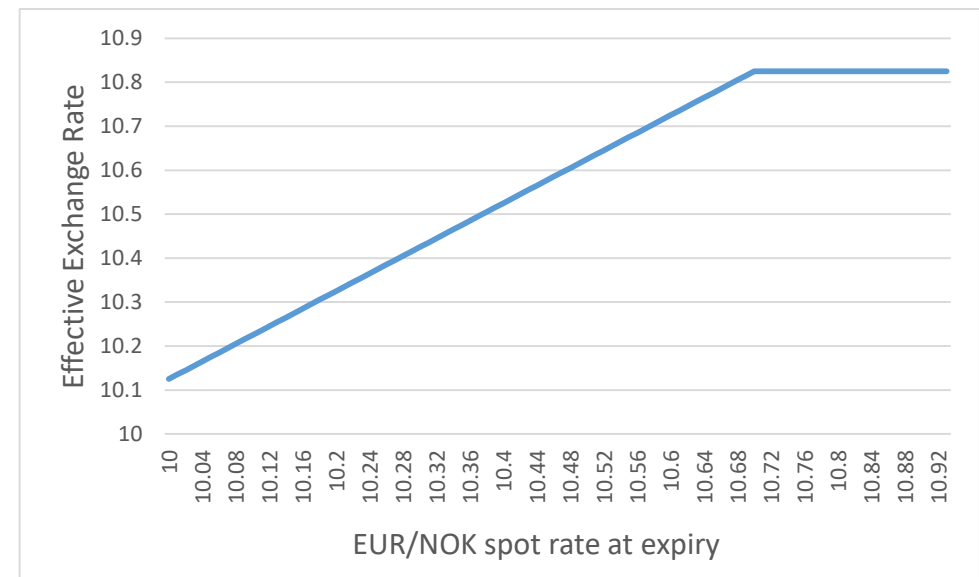
Option cost a premium of 0.1250 points  
(12.500 NOK per 100.000 EUR notional)

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



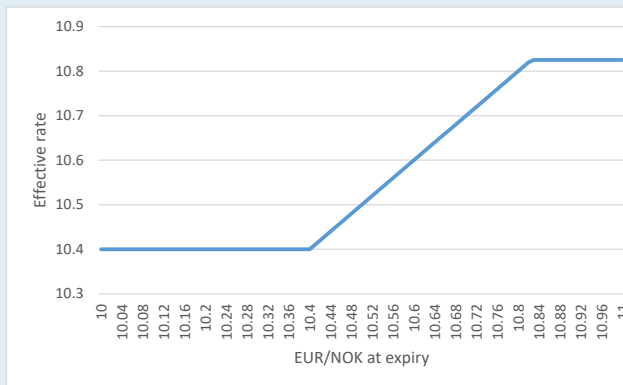
# Reducing premium cost, by combining options

Premium cost can be reduced or eliminated by combining call/put options

Examples (6 month strategies):

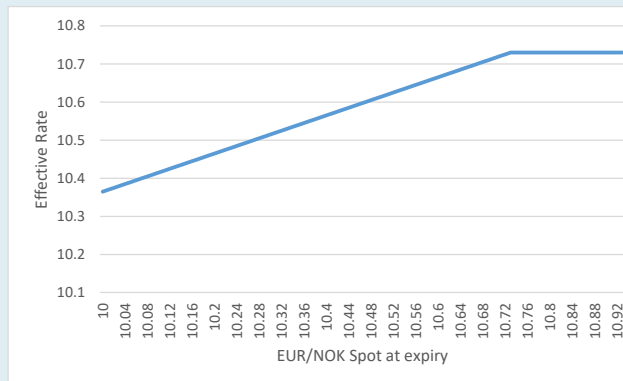
## ■ Risk Reversal:

- 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



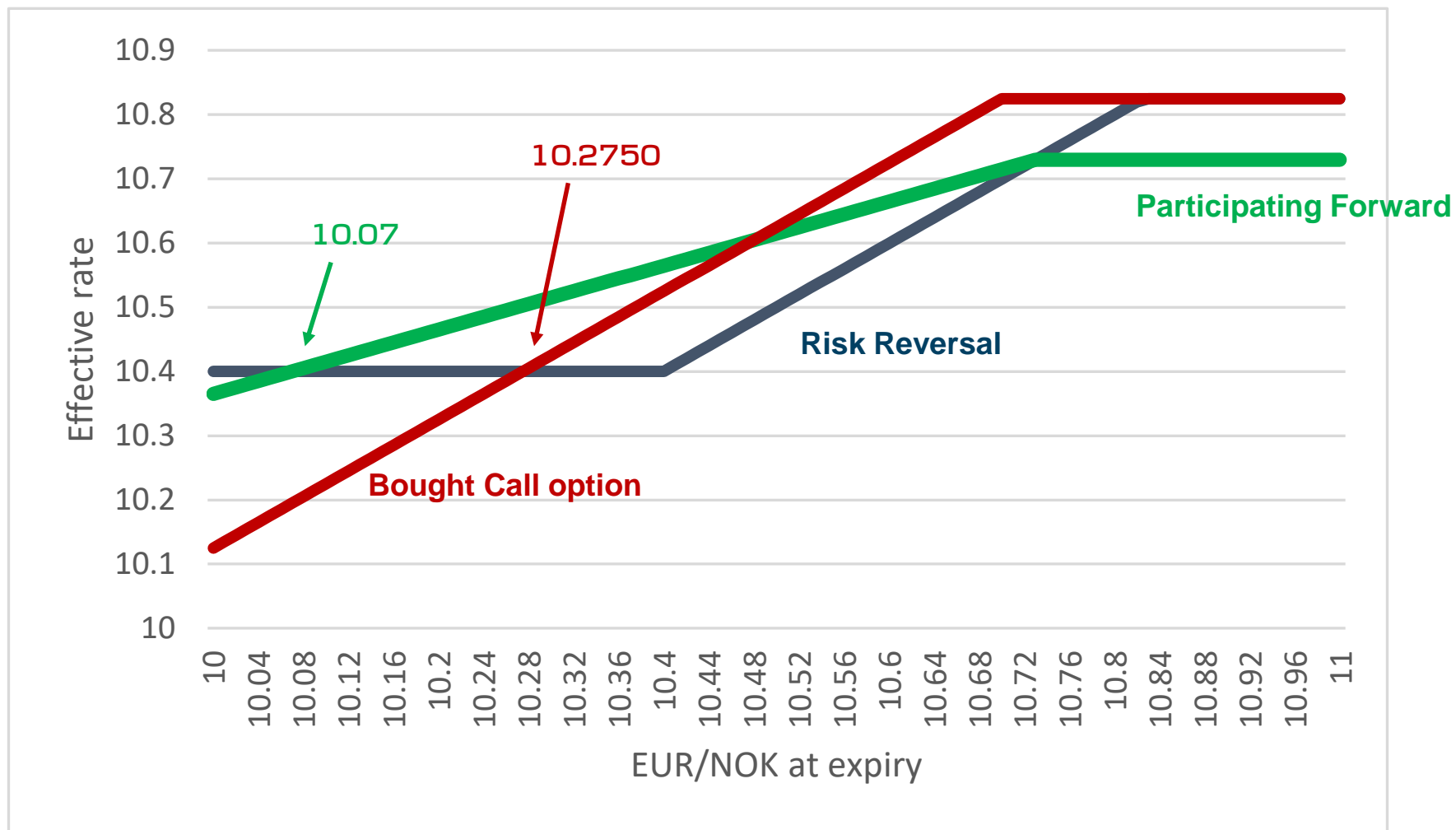
## ■ Participating Forward:

- 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

# Comparison of the strategies





## Why use options

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### ■ 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?

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## 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%

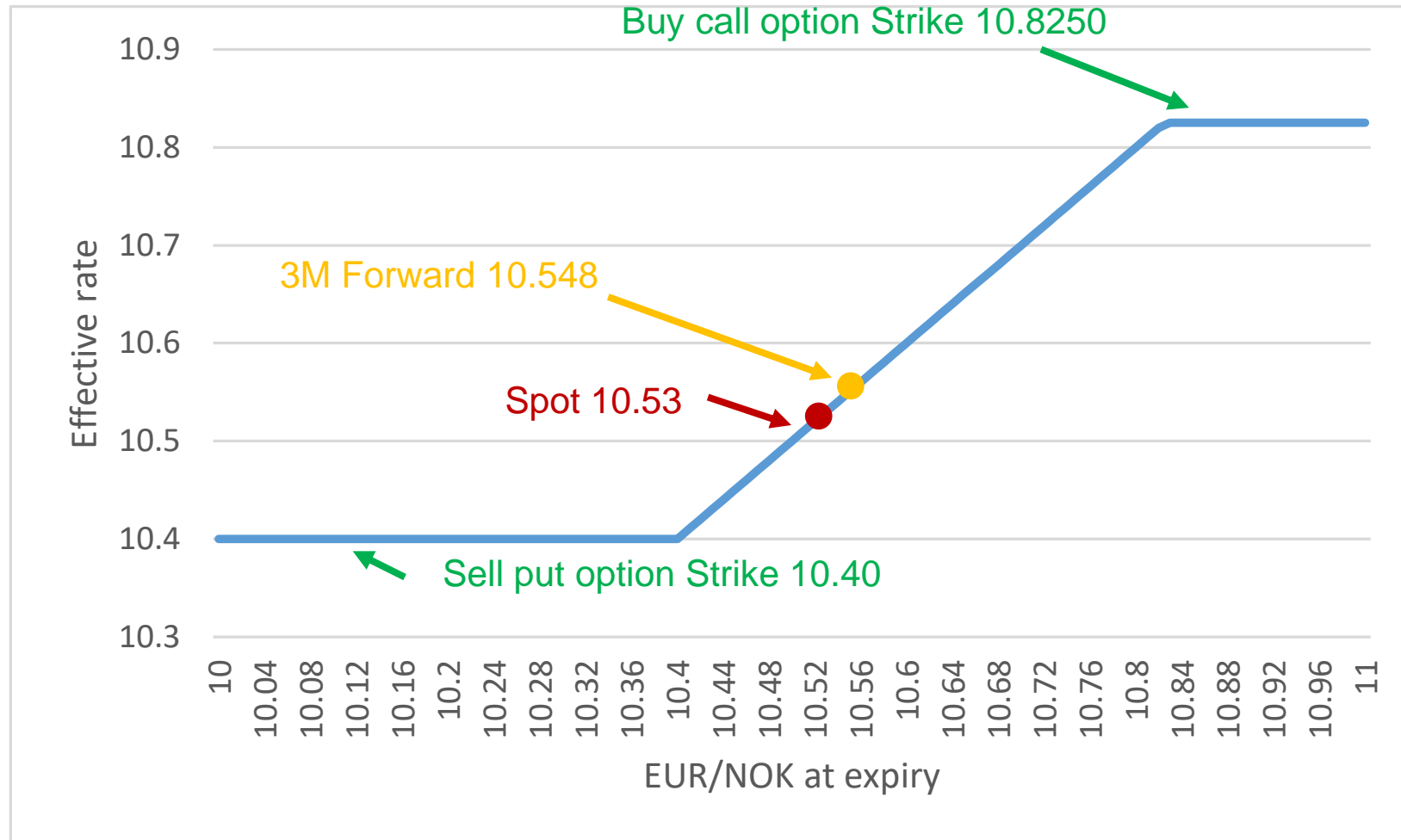


-0.55%

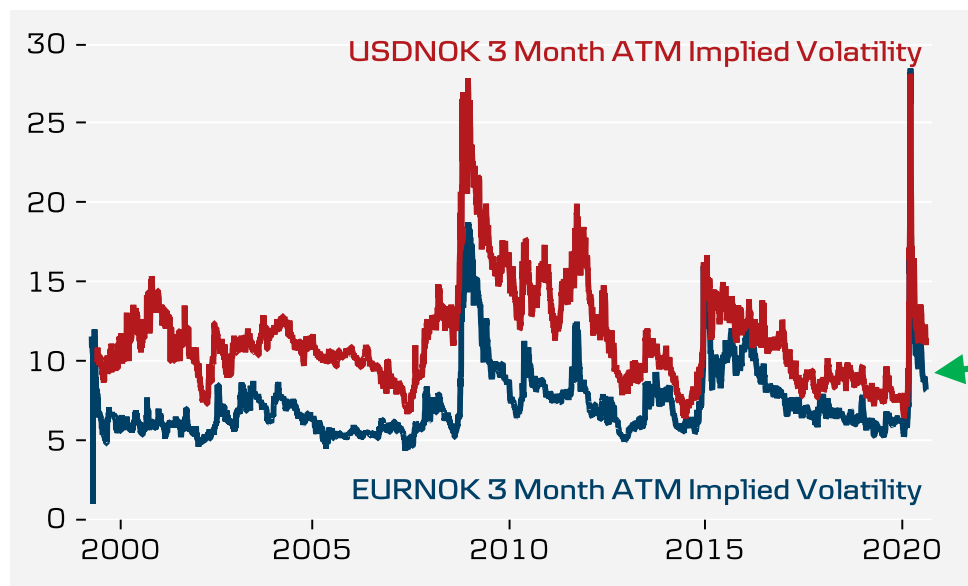


# Example: Risk Reversals (options) versus FX Forward

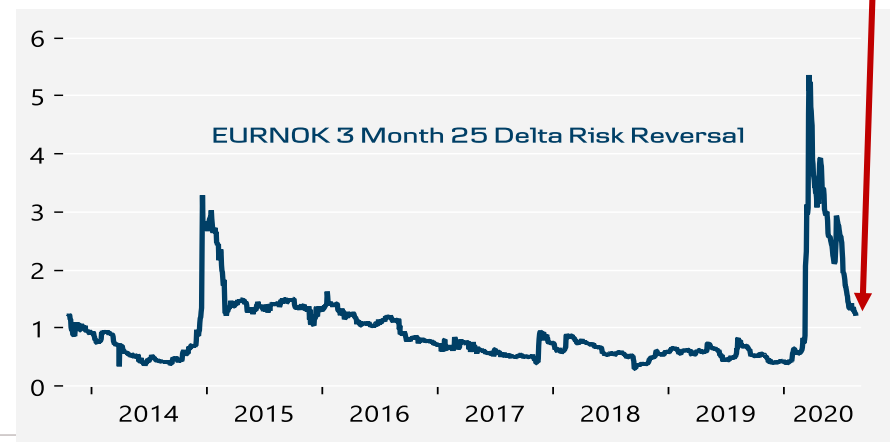
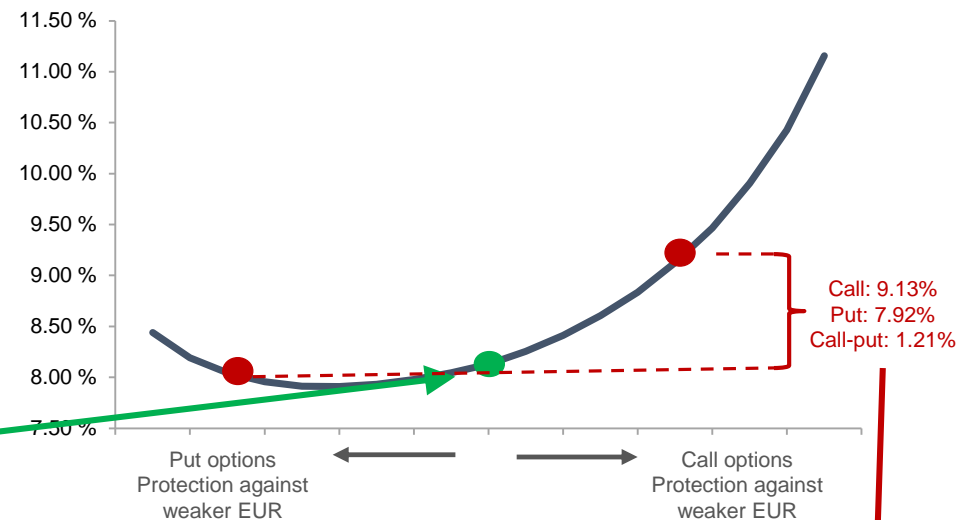
EUR/NOK example (EUR buyer)



# Risk Reversal – difference between put and call options



EUR/NOK Option smile (3M)

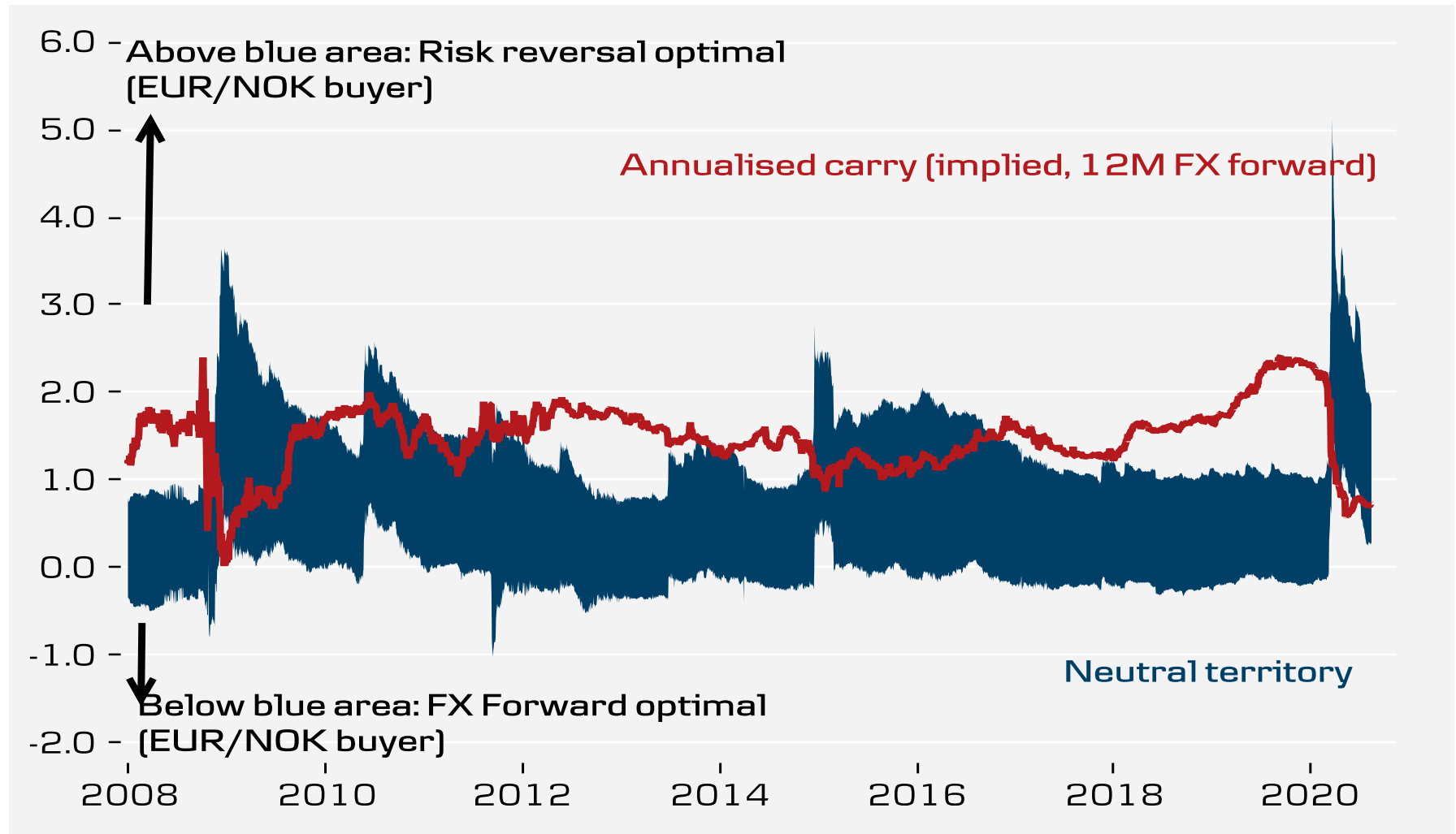


# Example: Simulating and testing performance: EUR buyer



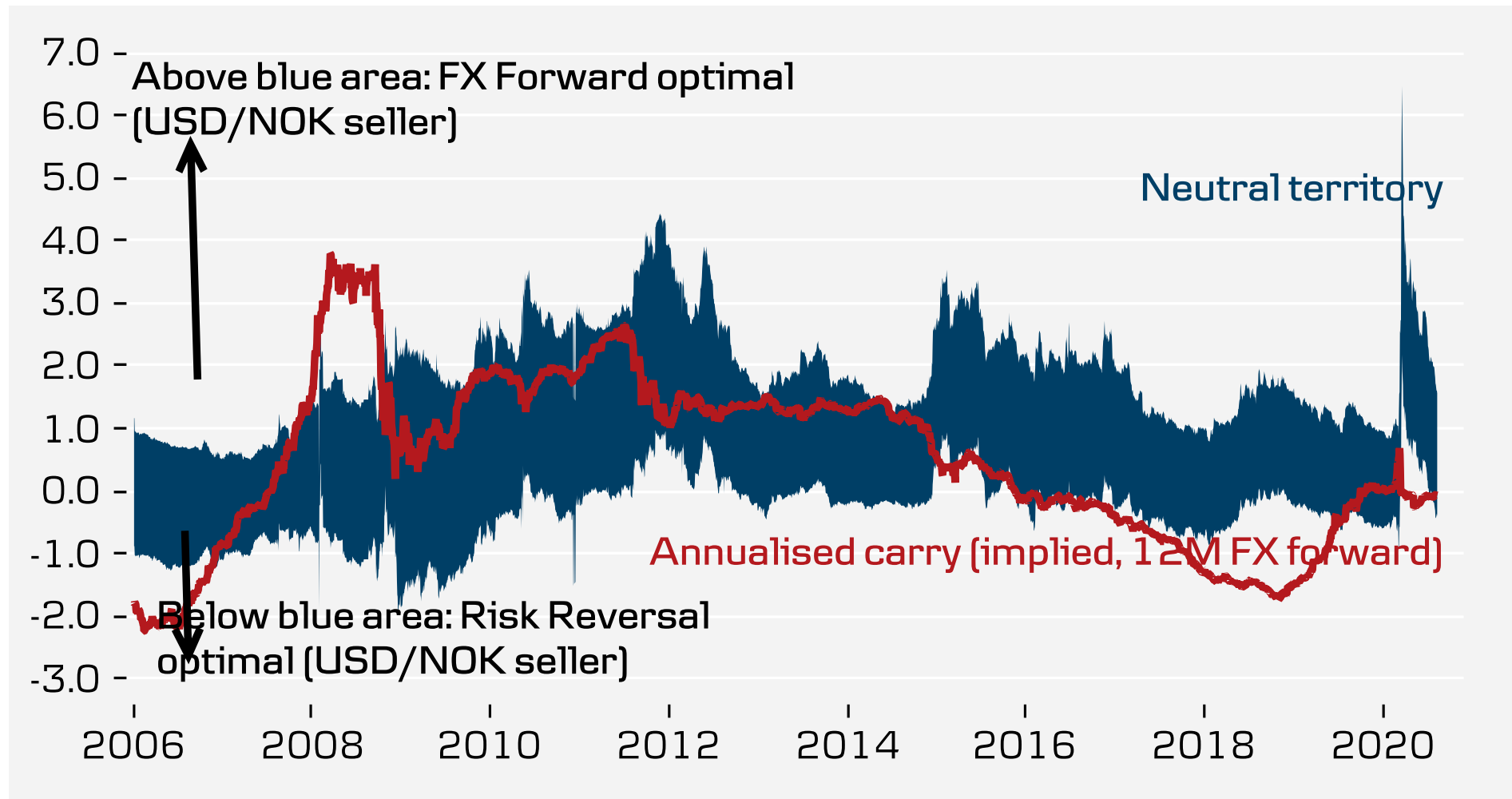
# “The rule”: EUR/NOK Buyer (1Y tenor)

IMPORTER (EUR buyer)



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

EKSPORTER (USD buyer)





# Hedge Instrument Guide

Find the optimal hedging instrument based on carry and volatility

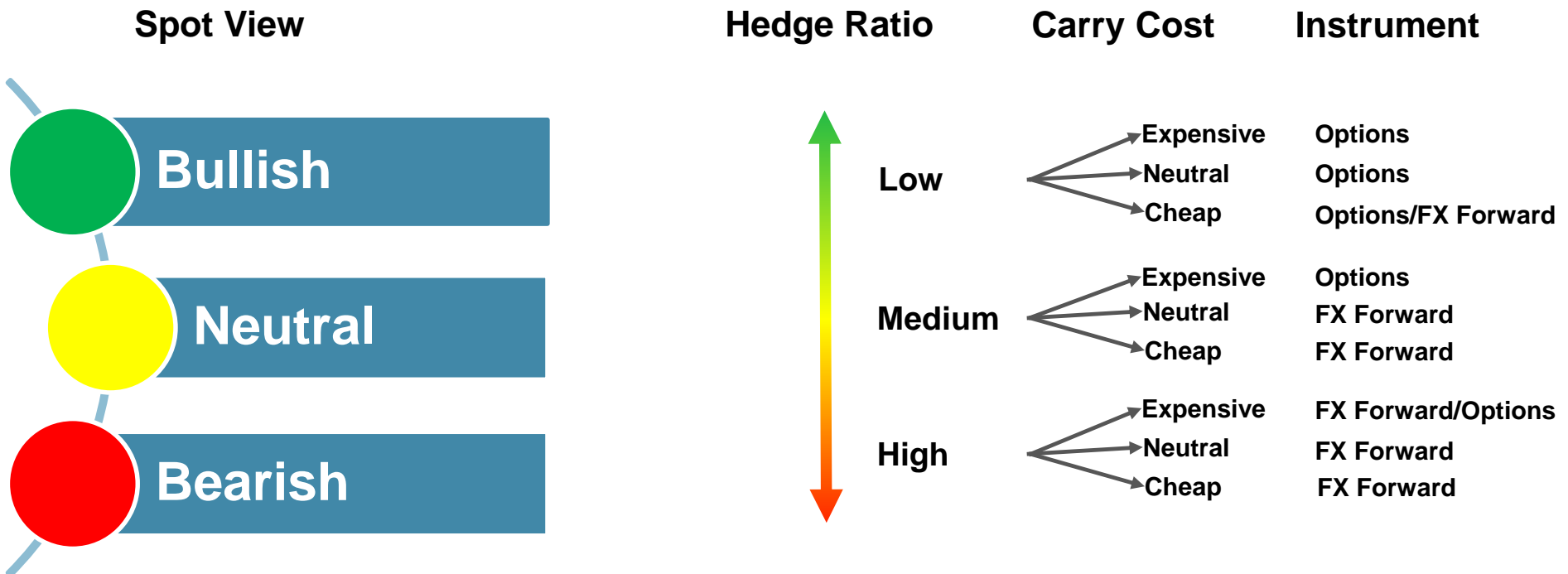
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## Change in market – change in instrument

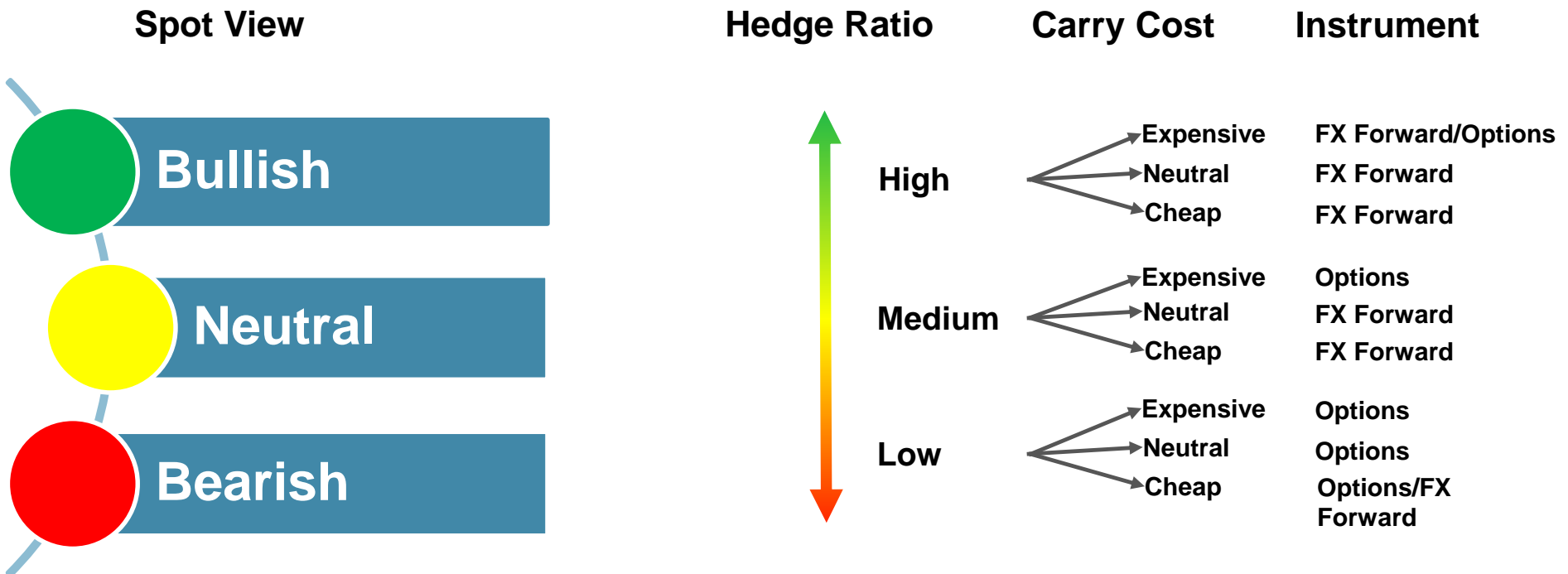
**Not one hedging instrument is suitable under all market conditions**



# Choice of Hedging Instrument (Currency Seller)



# Choice of Hedging Instrument (Currency Buyer)



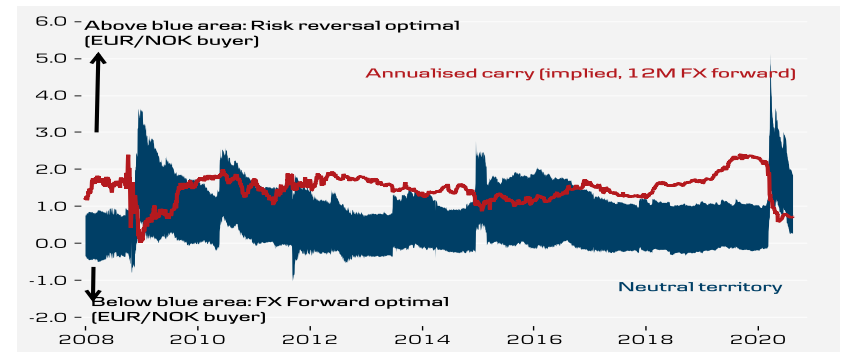
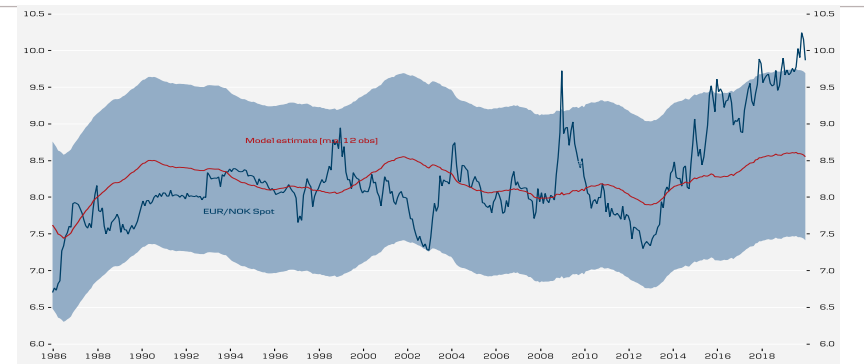
# Which instrument to use?

## EUR Seller

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

## EUR Buyer

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



# Choice of Hedging Instrument – Bearish View (EUR Seller)

## Spot View

**Bullish**

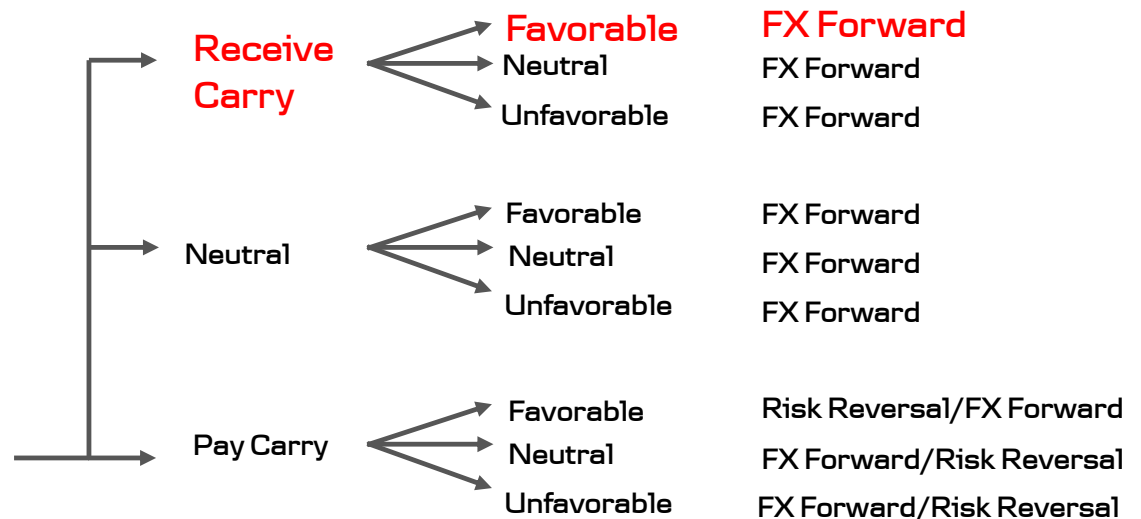
**Neutral**

**Bearish**

## Carry Cost\*

## Risk Reversal

## Instrument



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

# Choice of Hedging Instrument – Bearish View (EUR Buyer)

## Spot View

**Bullish**

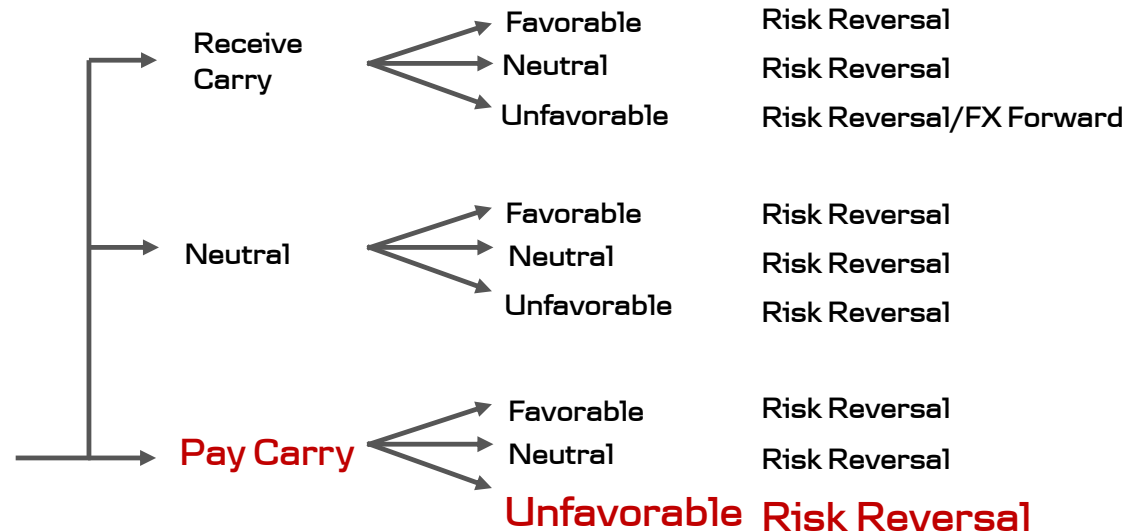
**Neutral**

**Bearish**

## Carry Cost\*

## Risk Reversal

## Instrument



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

## Summary

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- 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



## Questions?

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