

Foreign exchange risk management & Cash Flow at Risk



David Thilthorpe – Geneva 30th October, 2017

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The Tetra Laval Group

Three independent industry groups

Focus on technologies for efficient production, packaging and distribution of food

Swedish origin since 1951 – headquartered in Switzerland

Privately owned



Tetra Laval Group Board

Tetra Laval International

Tetra Laval Group Support Functions

Tetra Pak

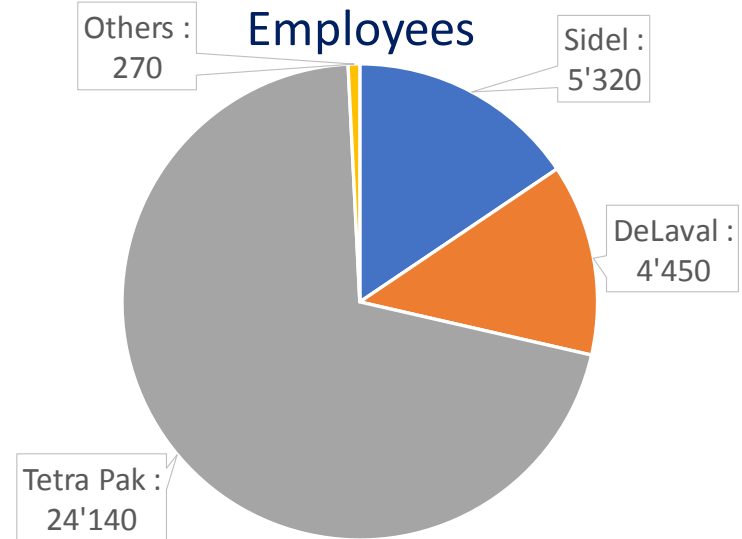
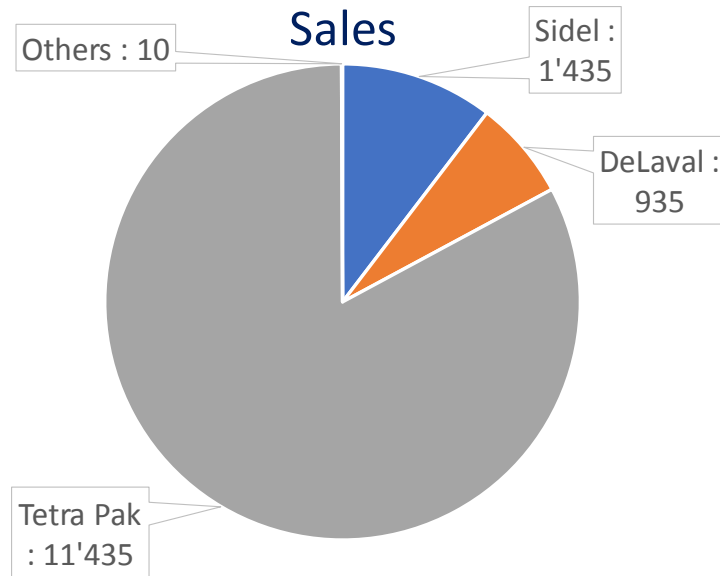
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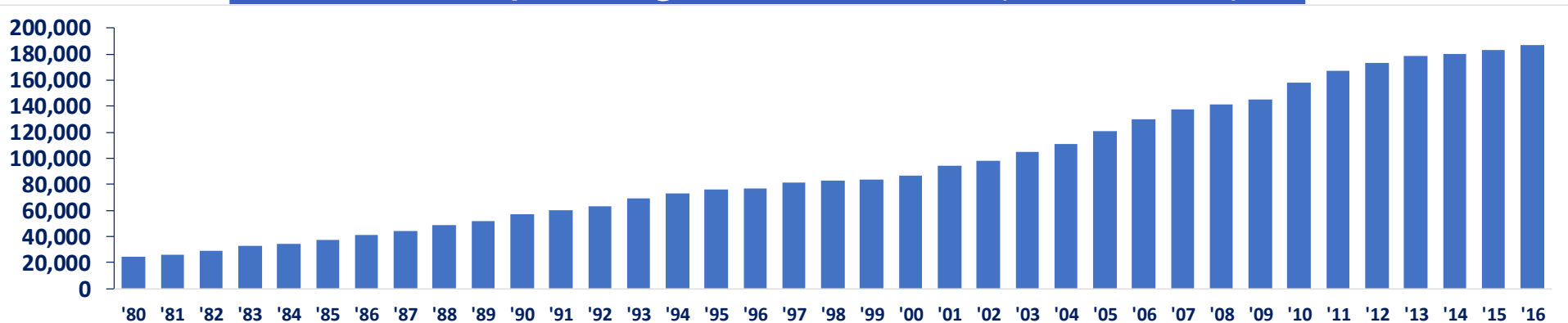


Tetra Laval in summary

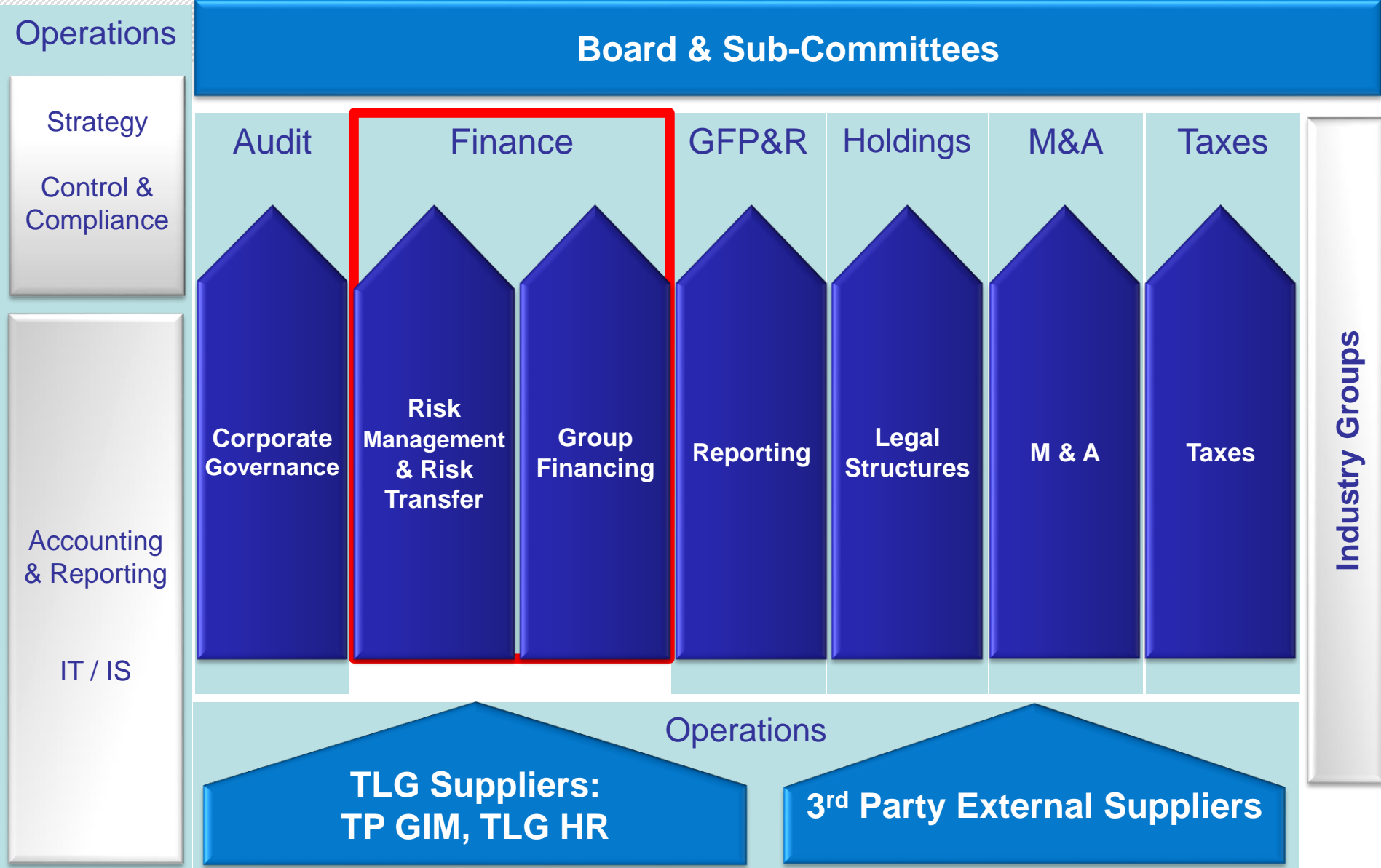
Net sales € 13.8 bn to more than 190 countries, 34,180 employees worldwide (Dec 2016)



187 bn packages sold 2016 (Tetra Pak)



Tetra Laval International - responsibilities



The Role of Group Treasury

Tetra Laval Group Treasury

Responsible for managing FX, interest rate, commodity risk, daily liquidity management & financial counterparty risk

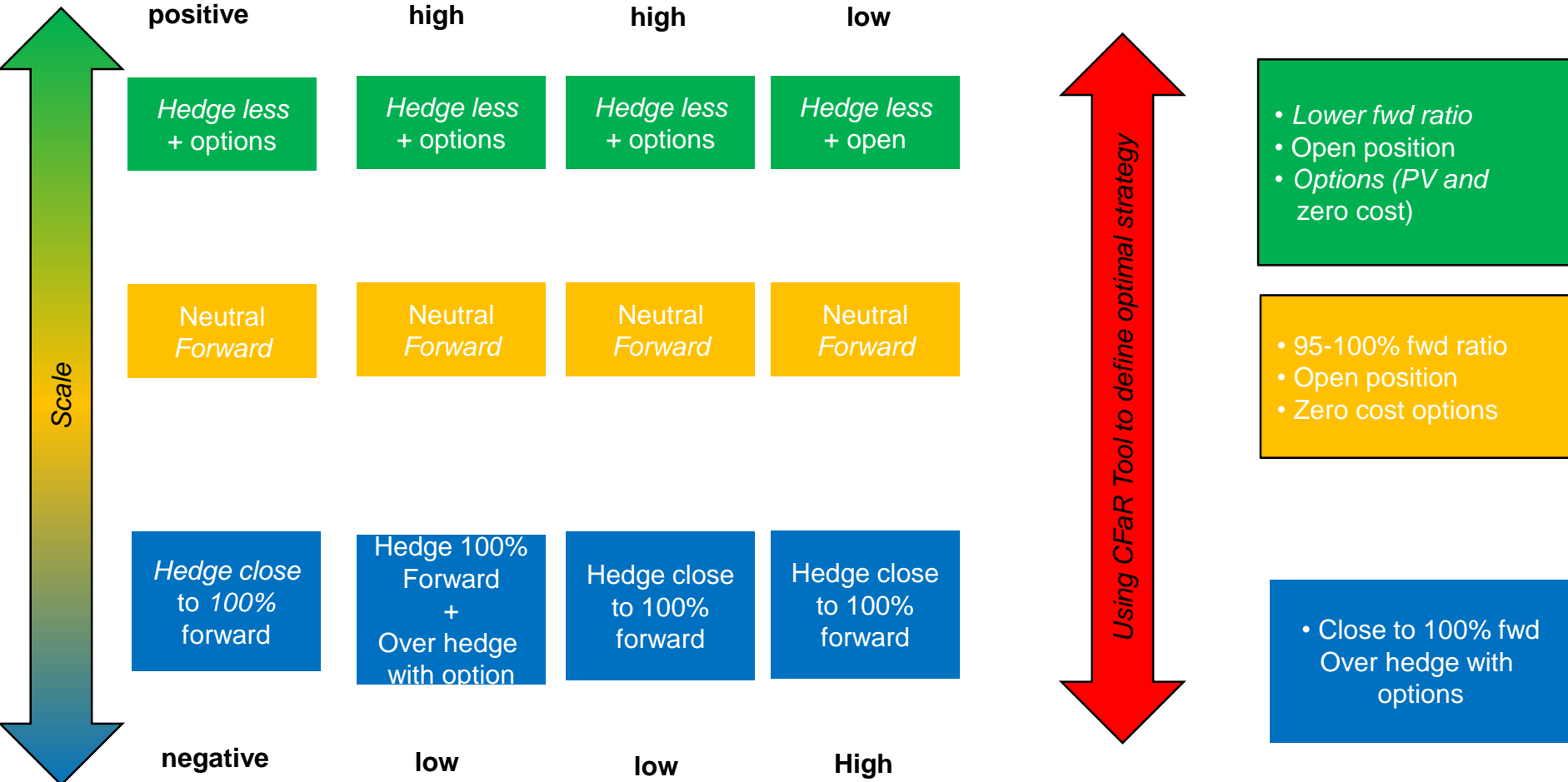
- All foreign exchange & interest rate risk are managed under risk management policies and natural hedging opportunities
- Commodity risk managed together with Procurement, main exposures are paper board, aluminium & polymers
- Most of FX exposure is based on annual pricing to customers, inter-company netting scheme used to centralise risk at Treasury

Foreign exchange risk management methodology

Strategy preparation methodology

Factors taken into consideration to determine annual strategy

Currency	Currency outlook, event risk Technical analysis & speculative positioning	2018 FX Flows forecast & historical volatility	Hedge Cost	Economic Exposure	Result of Cash Flow at Risk Analysis including forecast variation	Hedge Allocation
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Bank forecasts for 2018

Outlook very close to current one year forward with the exception of SEK and BRL

Consensus	Current spot	1Y fwd						Positive/ Negative Outlook	Comments
			Q317	Q417	Q118	Q218	Q418		
EUR/USD	1.12	1.14	1.10	1.12	1.12	1.13	1.15	Positive	Growth momentum in EUR, Trump impact less than expected
EUR/SEK	9.73	9.72	9.50	9.41	9.33	9.25	9.00	Negative	Higher inflation, undervalued currency
EUR/CNY	7.62	7.98	7.65	7.84	7.86	7.91	8.13	Neutral	All measures taken by BoC to stabilize the currency
EUR/JPY	123.48	123.72	124.50	126.00	127.00	126.00	126.00	Negative	BOJ continues QE to weaken JPY
EUR/CHF	1.08	1.08	1.09	1.10	1.10	1.10	1.12	Positive	Risk on mode will see the CHF weaken
EUR/MXN	20.34	21.94	21.26	21.84	21.56	21.84	22.25	Neutral	High carry, Trump impact and election in 2018
EUR/BRL	3.72	4.04	3.63	3.72	3.79	3.74	3.91	Positive	Better growth and inflation outlook & benefiting from carry trade - Political uncertainty

Bloomberg consensus as per June 13th

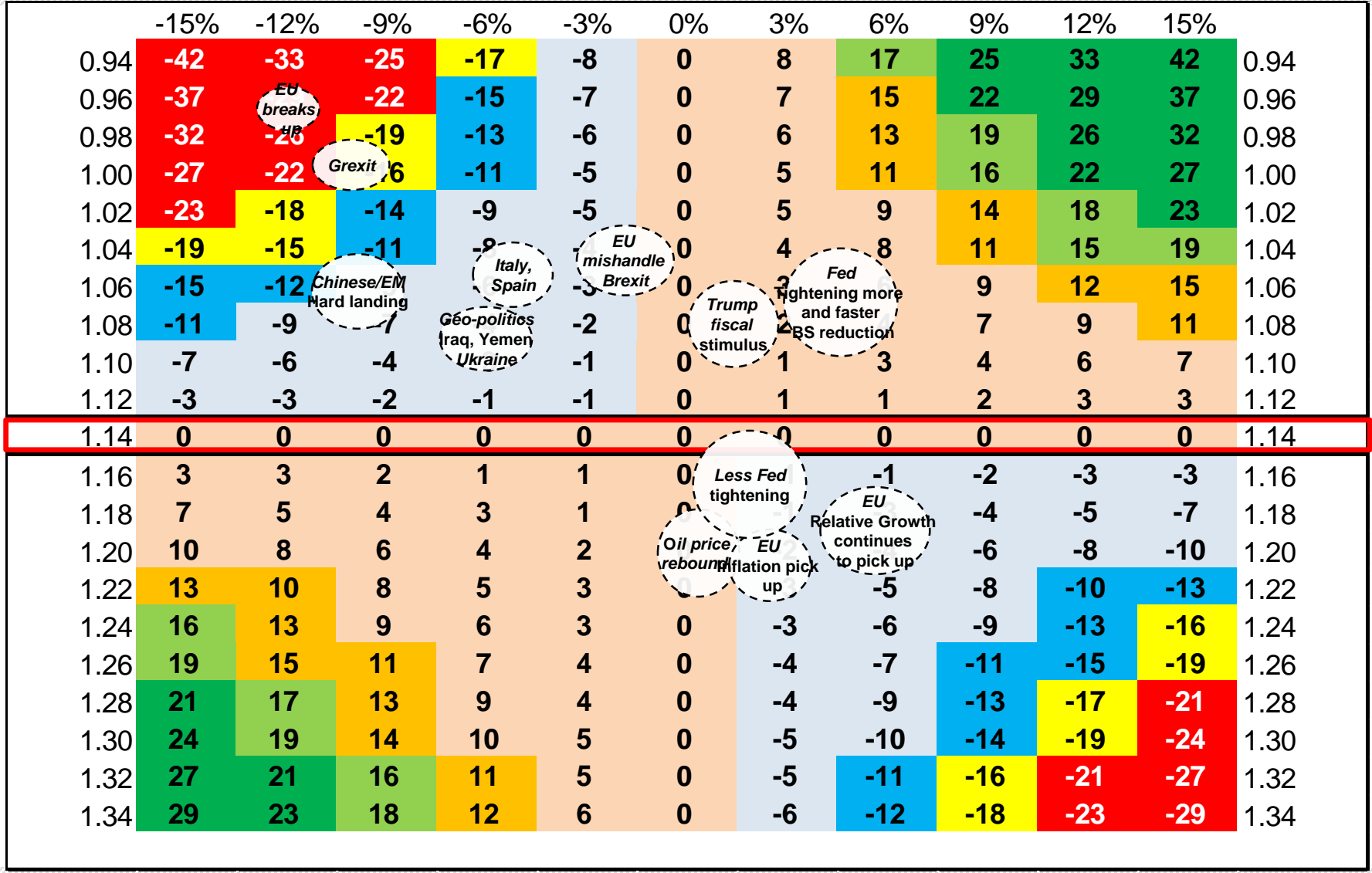
EURUSD: Consensus forecast vs actual

Consensus forecasts do not usually match actual outcomes



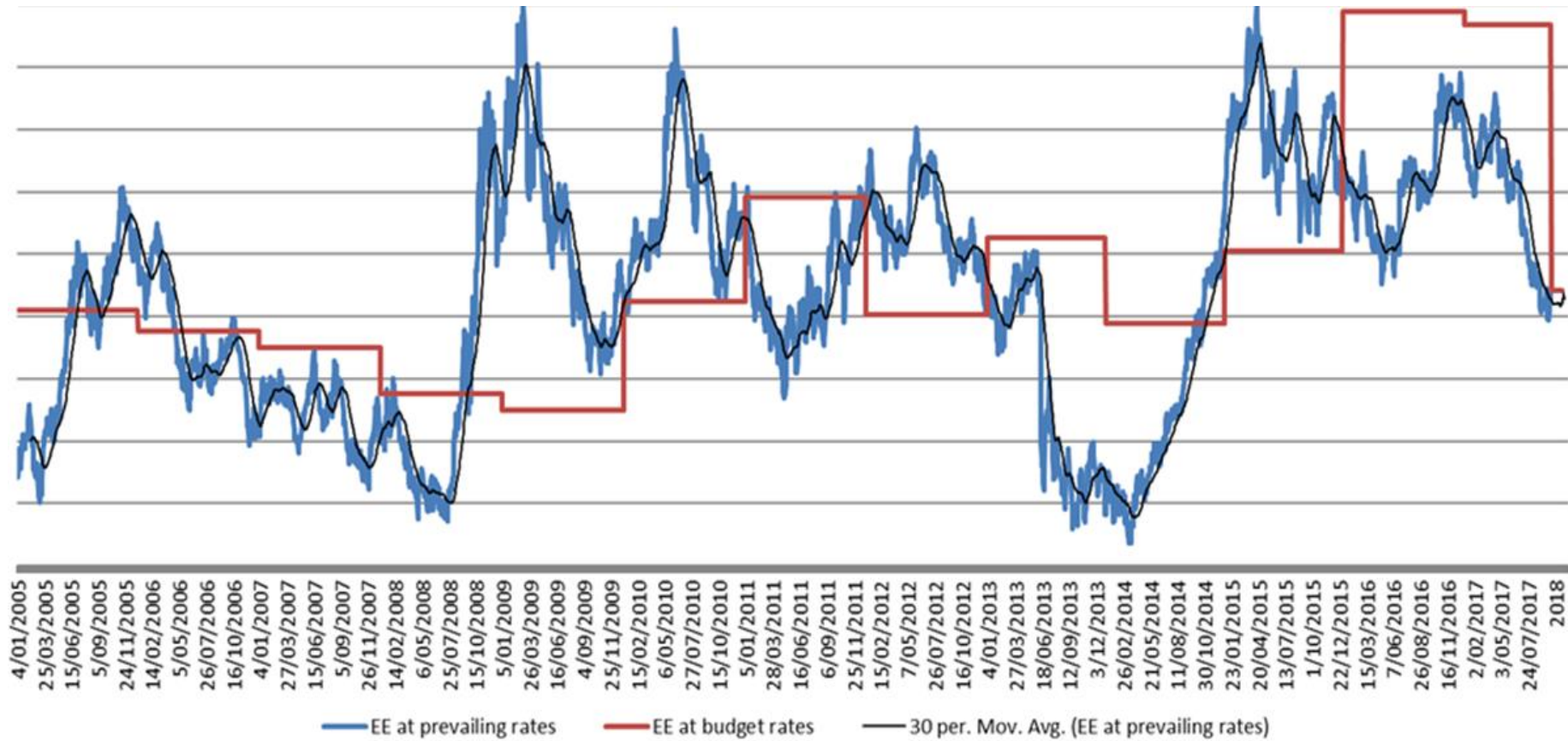
EURUSD event risk map: 100% forward benchmark

Subjective view of financial impact event risks may have if 100 % hedged with forwards



Group economic exposure analysis: example data only

Utilise FX rates & commodity prices to compare historic economic exposure levels & support hedging strategy

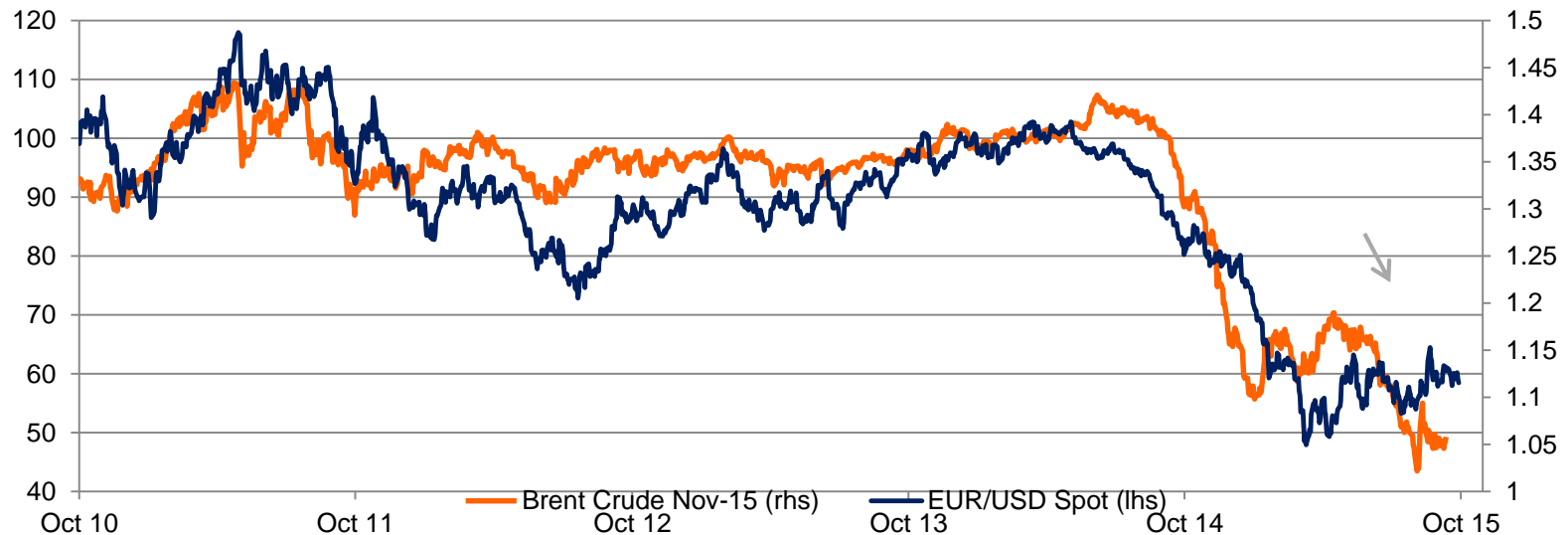


Cash Flow at Risk development & future plans

CFaR Project Background

How to quantify and manage our financial market risk

- What is the best way to quantify our financial risk exposure – do we need to hedge at all ?
- How are financial markets inter-related – does this provide an opportunity to hedge less & save cost without increasing risk ?
- Can we create a dynamic model to propose & adjust optimal hedging strategies ?
- What do other corporates do, what do banks & consultants recommend ?



Cash Flow at Risk model development

We are working together with ING to build our own CFaR model

Financial risk management model

Macroeconomic scenarios – impacts for business & financials

CFaR for Commodity exposures

Dynamic hedging

CFaR for exposure forecast variation

Optimal hedge portfolio

CFaR for FX exposures

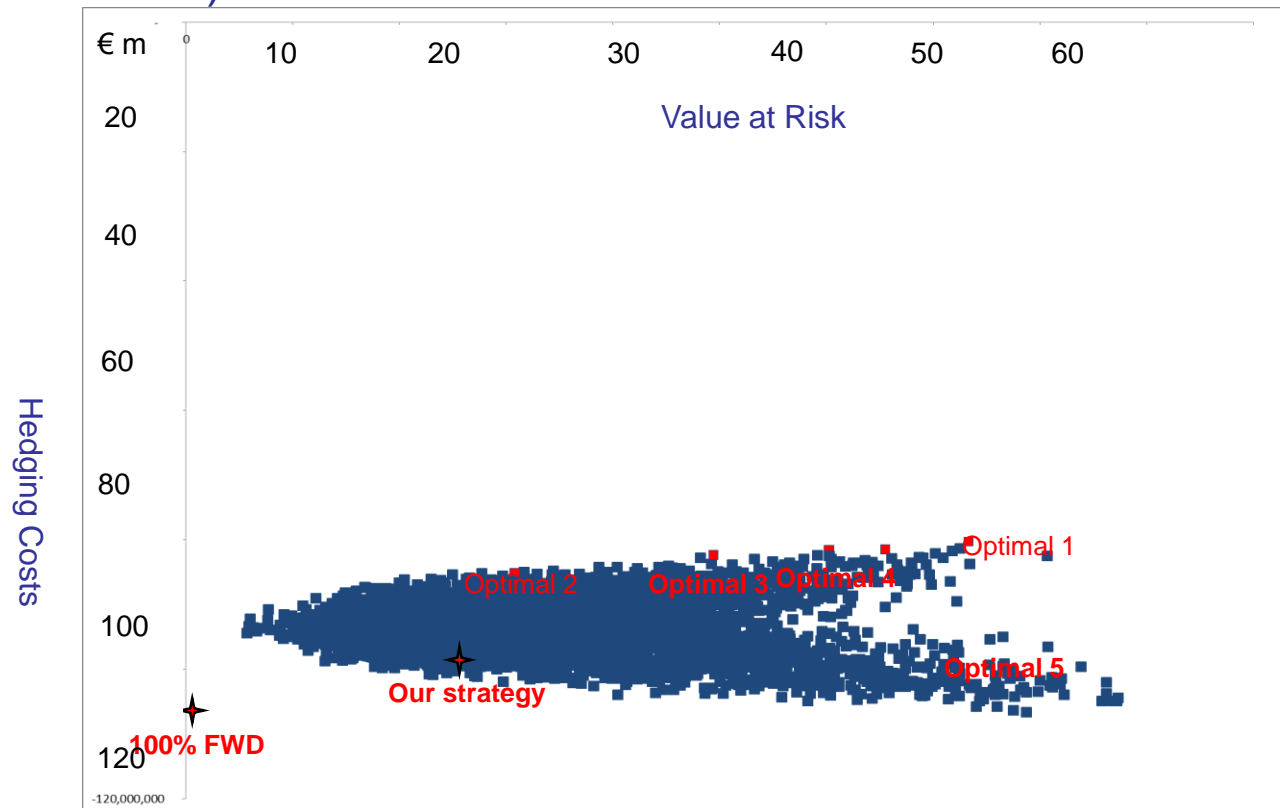
Economic exposure identification

Corporate benchmarking

Cash Flow at Risk model – hedge optimisation

CFaR model computes thousands of hedging strategies' risk, cost and forecast valuations to help selecting a hedging strategy

- Compute optimal hedging strategies based on risk tolerance and hedge frame % cover
- Evaluate risk under forecasted FX curves and forward curves (hedge cost minimization)



CFaR model proposes optimal strategies & includes impact of volume variation (sample data)

Our strategy includes options for risk of volume variation

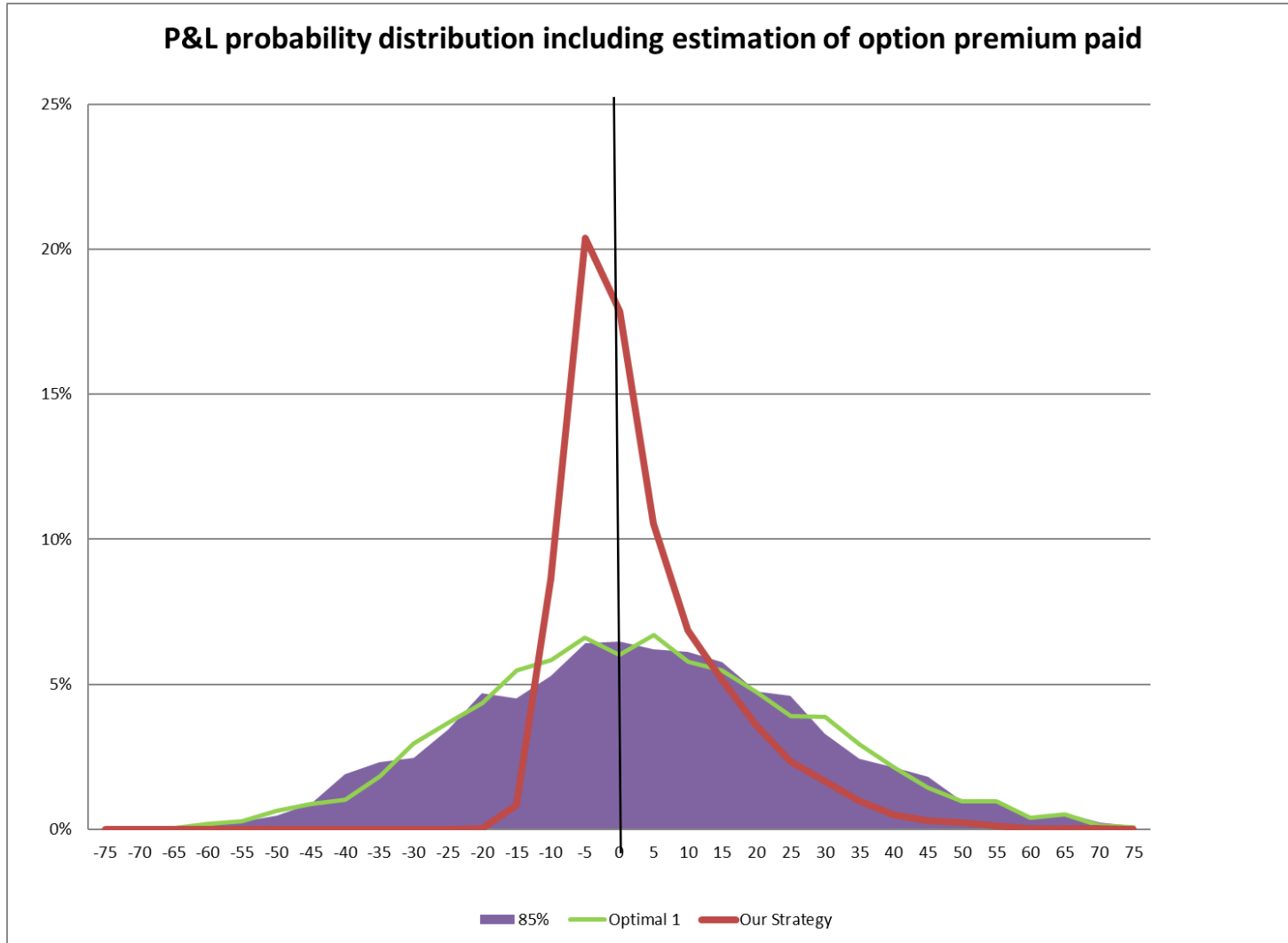
	Selected Optimal Strategies run with 85%-115% hedge constraints									Treasury Strategy
	Benchmark	No hedges	85%	Optimal 1	Optimal 2	Optimal 3	Optimal 4	Optimal 5		
USD	100%	0%	85%	85%	95%	90%	85%	85%	75% forward, 15% PV, 5 % RR	
SEK	100%	0%	85%	105%	105%	95%	100%	90%	85% forward, 15% PV	
CNH	100%	0%	85%	85%	95%	85%	85%	85%	75% fwd, 15% PV, 10% open	
MXN	100%	0%	85%	85%	85%	85%	90%	85%	85% forward, 15% open	
CHF	100%	0%	85%	95%	105%	105%	100%	105%	80% fwd, 10% PV, 10% open	
JPY	100%	0%	85%	95%	110%	110%	115%	110%	75% forwards, 15% PV, 10% RR	
Hedging Cost	- 141	-	- 120	- 120	- 130	- 124	- 124	- 122	- 134	
VAR	-	393	59	55	24	40	46	51	3	
Option Cost	Gross VaR 780									- 16

POTENTIAL VOLUME VARIATION IMPACT (**)

<i>Var including Volume</i>									
<i>Variation "+"</i>	53	443	111	106	72	91	97	103	49
<i>Var including Volume</i>									
<i>Variation "-"</i>	60	339	15	18	43	21	18	15	11

Comparing the strategies

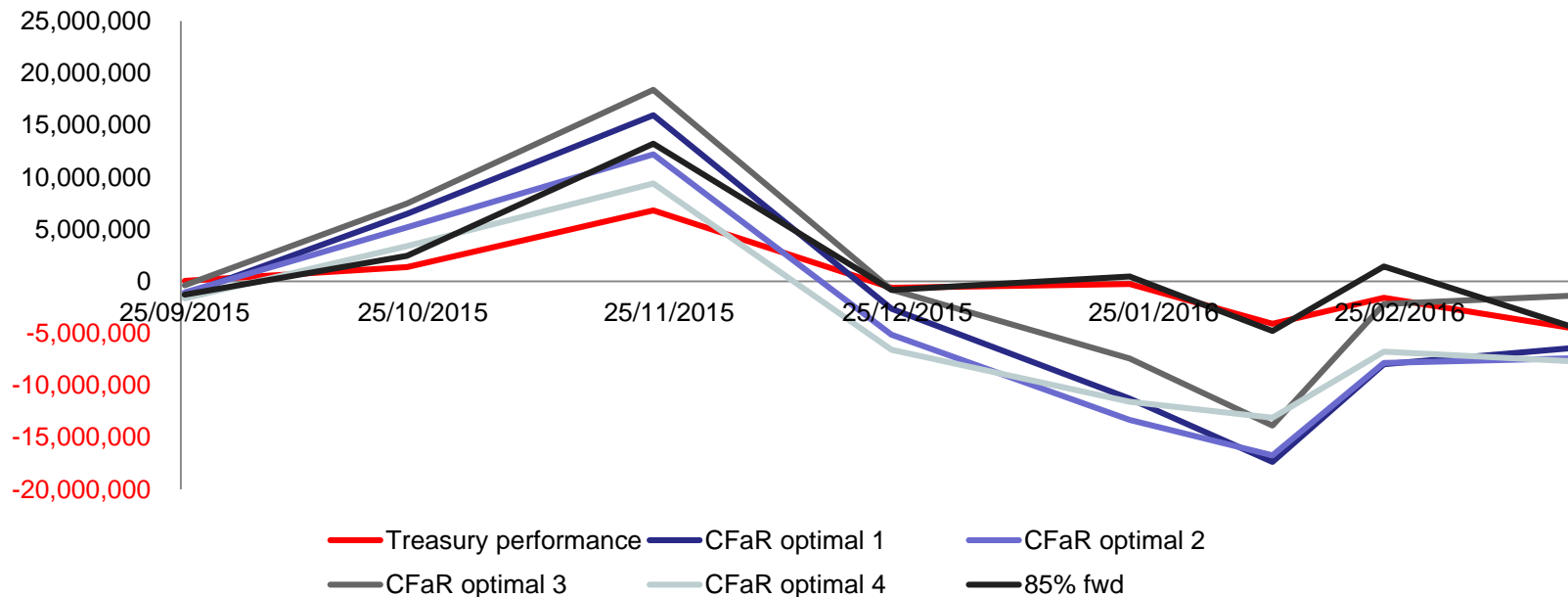
Treasury strategy has lowest worst case outcome whilst allowing for volume variation management and potential gain from positive event risks



Risk reporting & hedging adjustments

Monthly tracking of strategy performance and adjustment to strategy based on model outputs

- Monthly tracking of strategy performance
- Treasury's P&L shows lower volatility vs other strategies



CFaR model next steps

Further work required to complete CFaR model development

- Include commodity exposure as part of Group CFaR & assess potential changes to hedging approach
- Include sensitivity analysis based on the impact of macro economic events & how these events may impact our business