

# How to improve your cash flow predictability

UTIPULP Manchester April 21. 2017

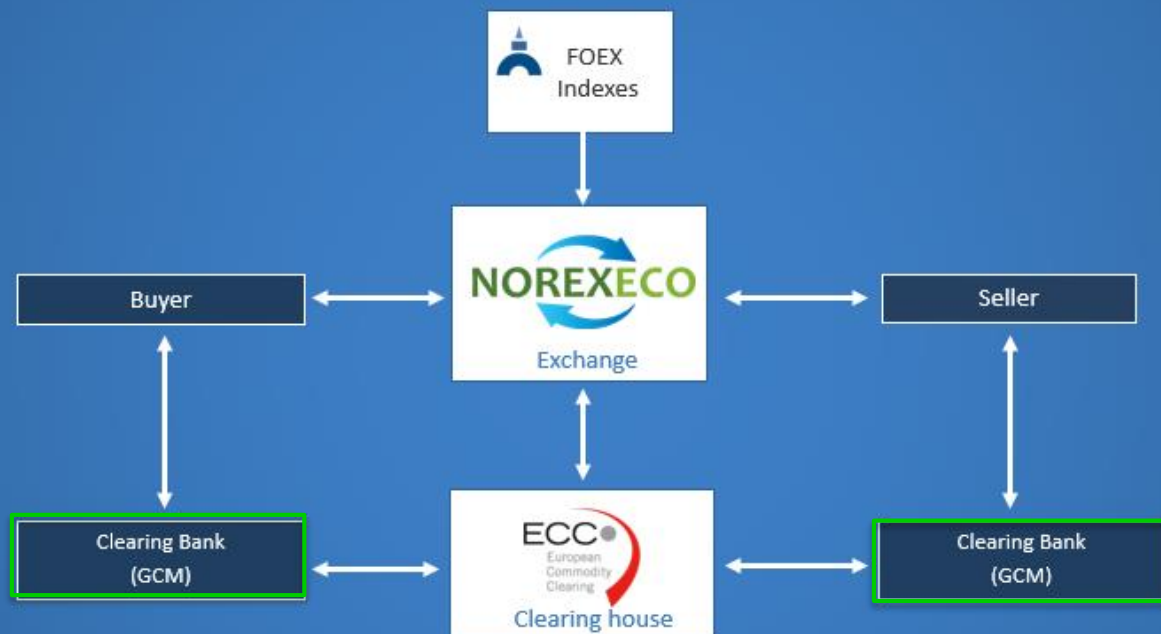
Frederik Husebye  
Director Sales & Marketing

# How to improve your cash flow predictability

- SimulationFinance
  - Input data
  - Risk
  - Result of simulations
  - Optimal hedges

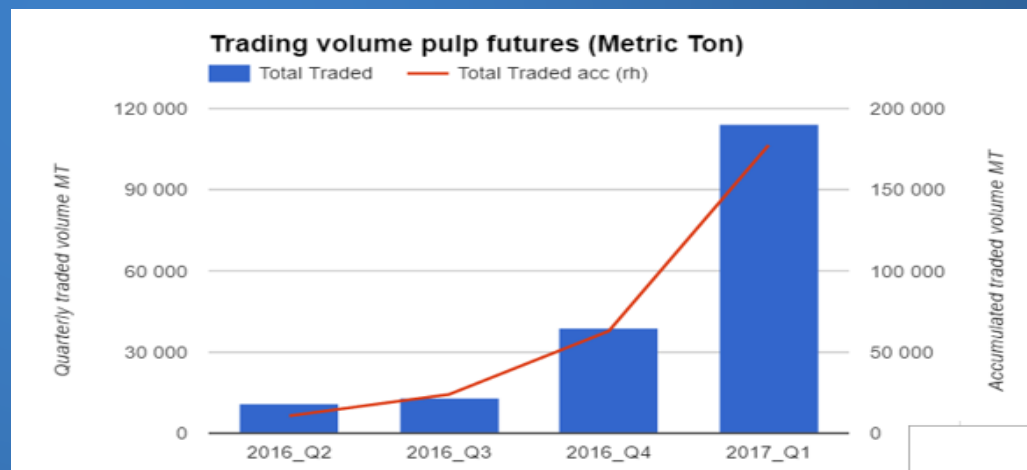
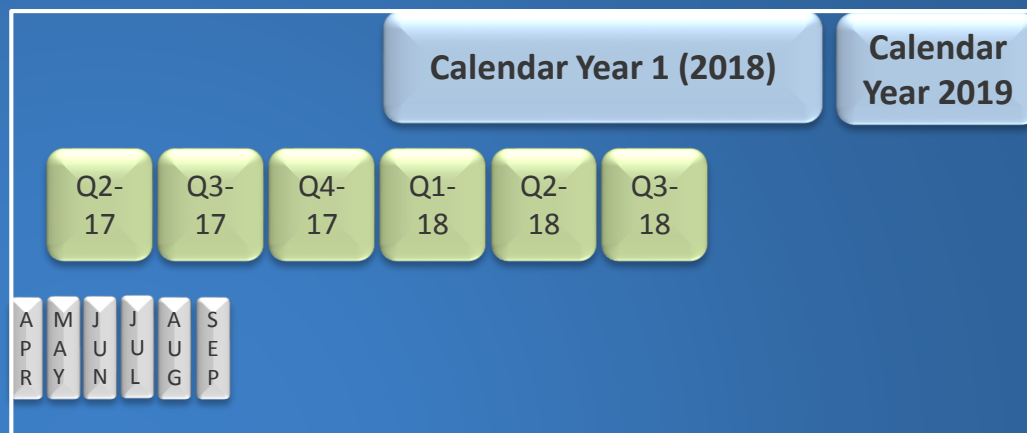
# The NOREXECO Exchange

- Licensed by the Norwegian Ministry of Finance
- Regulated and compliant with regulations in all major jurisdictions
- No credit risk
- Low transaction cost
- Full anonymity



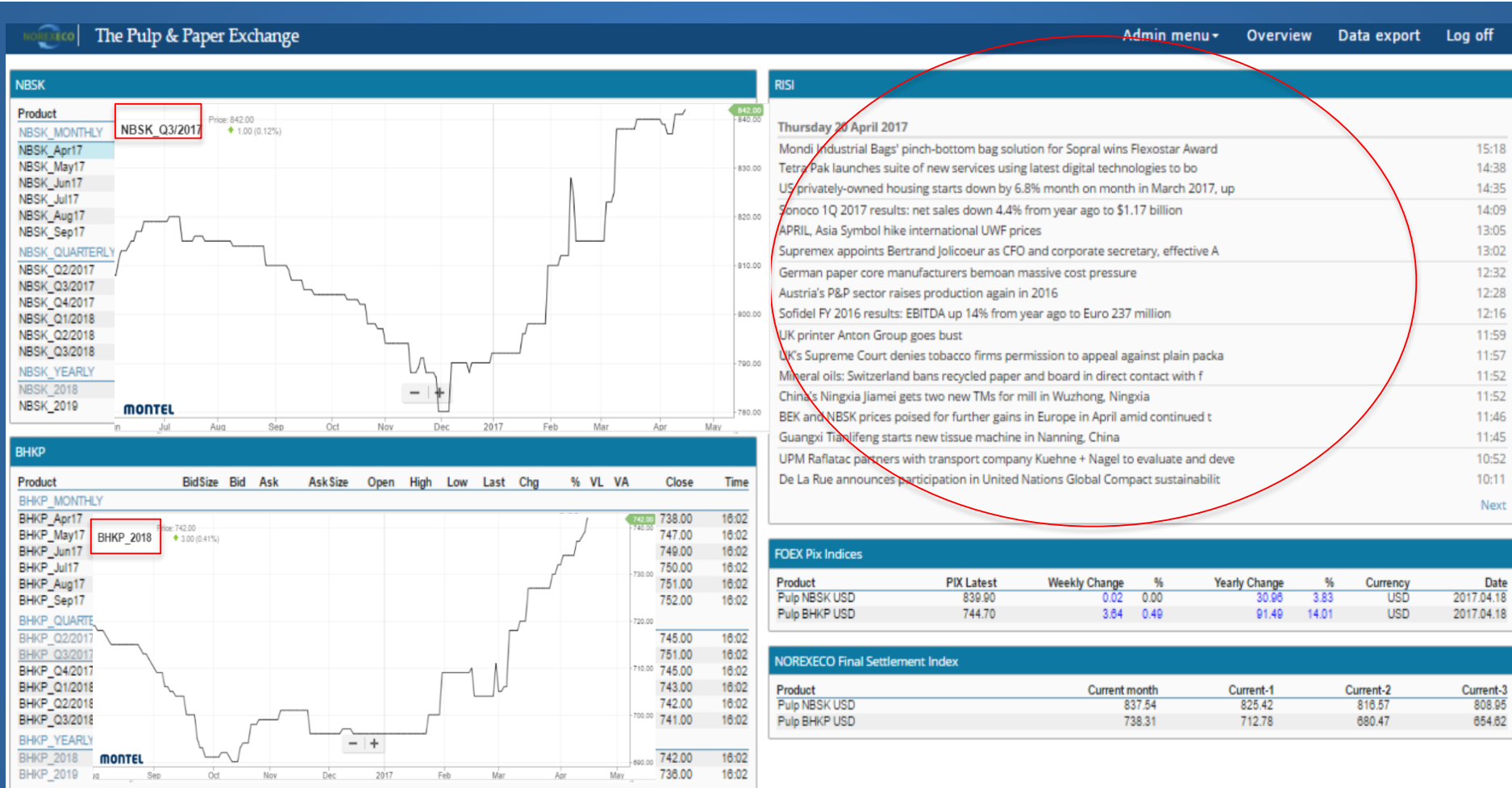
# The NOREXECO Exchange

- NOREXECO offers trading in Cash settled financial futures contracts
- Listed Products:
  - NBSK & BHKP
  - 6 Months
  - 6 Quarters
  - 2 Calendar years
- Contracts settle against the FOEX PIX



# The NOREXECO Information Services (NIS)

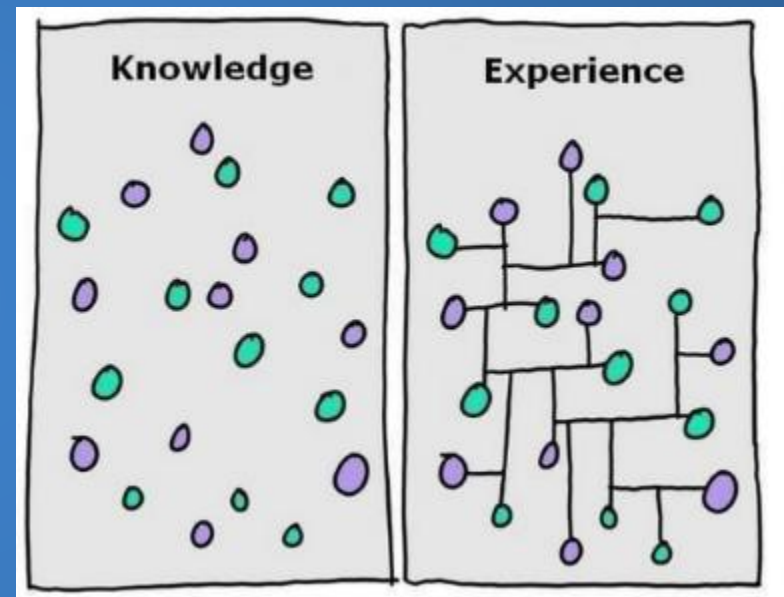
- Data lead to insight. Insight leads to opportunity!



# SimulationFinance

## Connecting the dots

- A specialist software company
- Mission:
  - To simplify and de-mystify risk to facilitate common understanding across the organization

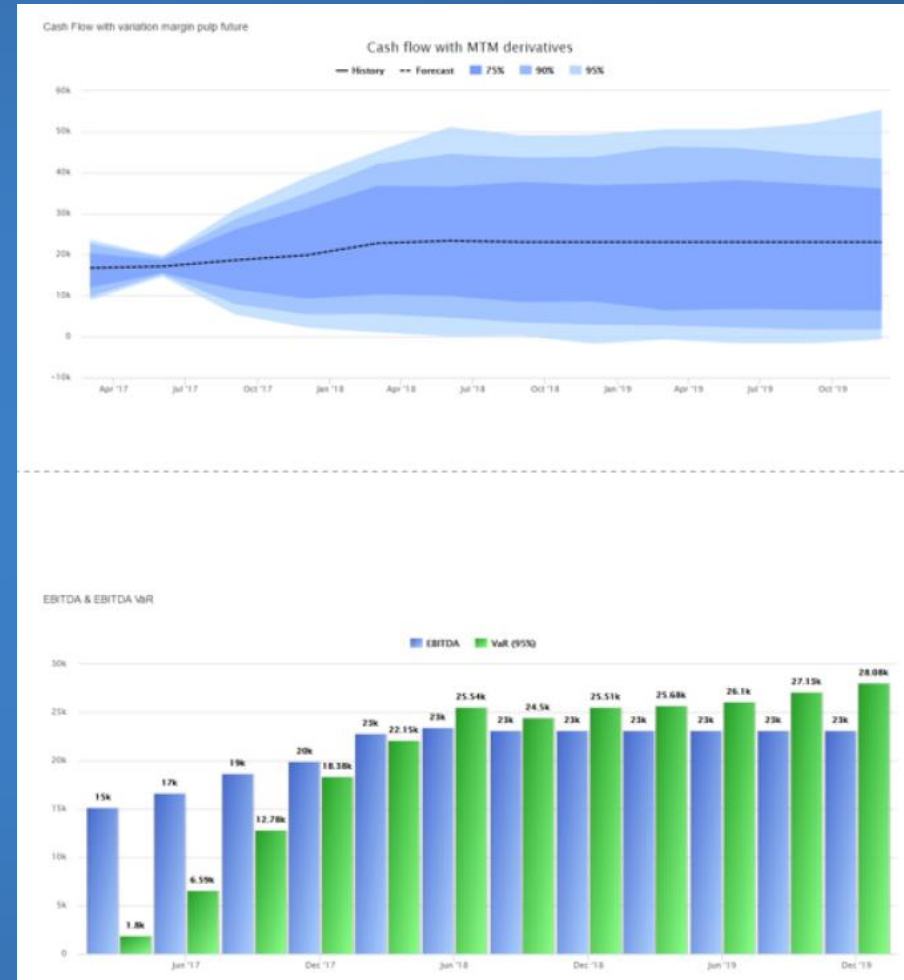


# SimulationFinance

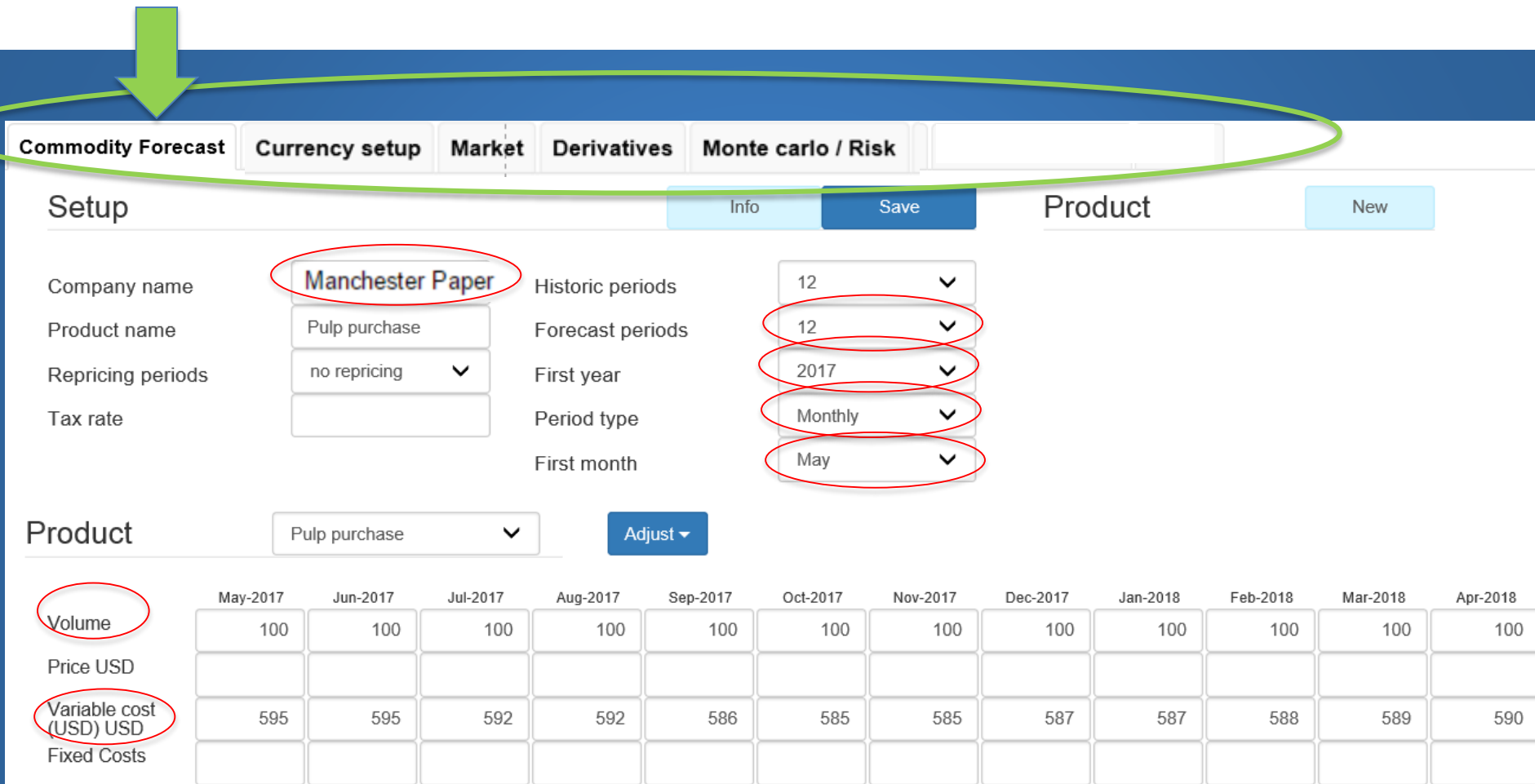
## The commodity exposure model

The system allows to include risk assumptions thus showing the range of possible outcomes in powerful fan charts, but also in key risk parameters such as VaR

- Paper,
- Pulp,
- Currency and
- Energy



# Standard input data



**Commodity Forecast** | Currency setup | Market | Derivatives | Monte carlo / Risk

**Setup** | Info | Save | **Product** | New

Company name: **Manchester Paper**

Product name: Pulp purchase

Repricing periods: no repricing ▼

Tax rate:

Historic periods: 12 ▼

Forecast periods: 12 ▼

First year: 2017 ▼

Period type: Monthly ▼

First month: May ▼

**Product** | Pulp purchase ▼ | Adjust ▼

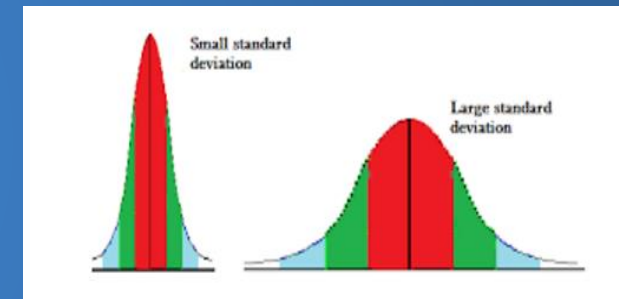
	May-2017	Jun-2017	Jul-2017	Aug-2017	Sep-2017	Oct-2017	Nov-2017	Dec-2017	Jan-2018	Feb-2018	Mar-2018	Apr-2018
<b>Volume</b>	100	100	100	100	100	100	100	100	100	100	100	100
Price USD												
<b>Variable cost (USD) USD</b>	595	595	592	592	586	585	585	587	587	588	589	590
Fixed Costs												



# Data input

## - Risk Simulation

Monte Carlo Simulation:  
The most commonly used  
method for probability  
forecasting



- Standard deviation is a measure of the width of the distribution around the mean

Commodity Forecast
Fixed contracts
Historic
Currency setup
Market
Derivatives
Monte carlo / Risk

Setup
Info
Save

Select products

Business risk
Included
Currency risk
Not included
First Product
Pulp purchase
Second Product
[Select Entity]

Business risk

	Standard dev.	Expected change	Mean reversion	Jump change I	Jump prob. I	Jump change
V			0			
P	4%		0			
C			0			
F			0			

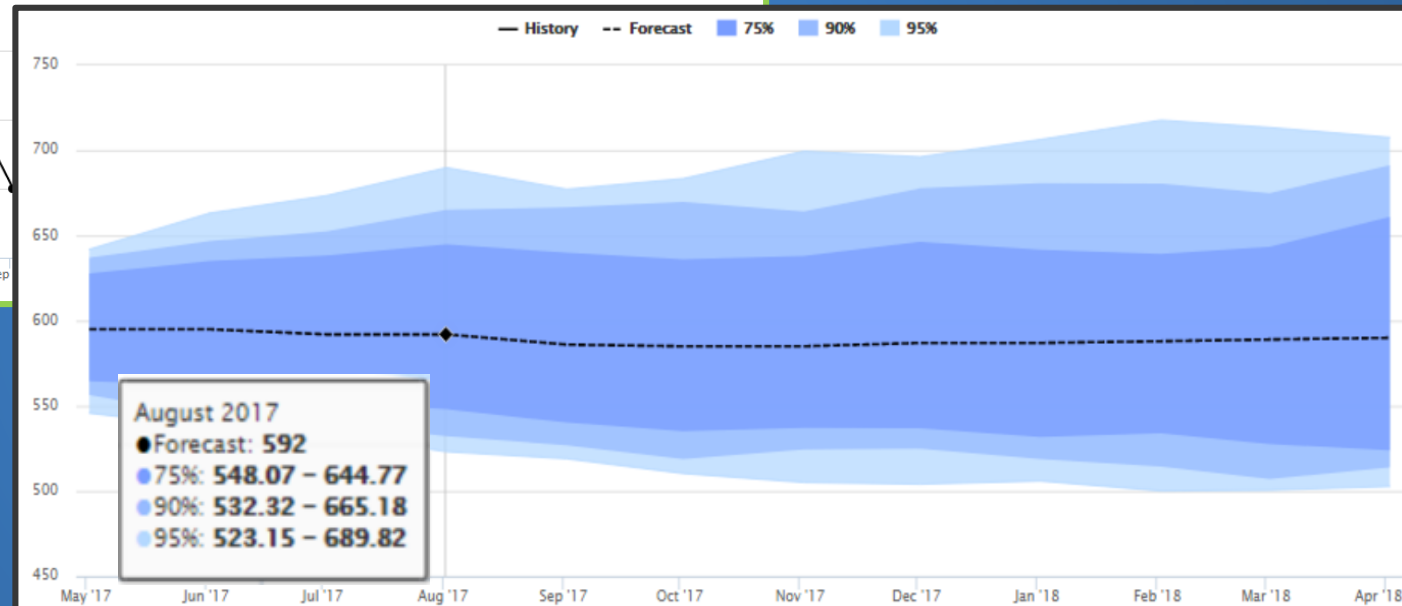
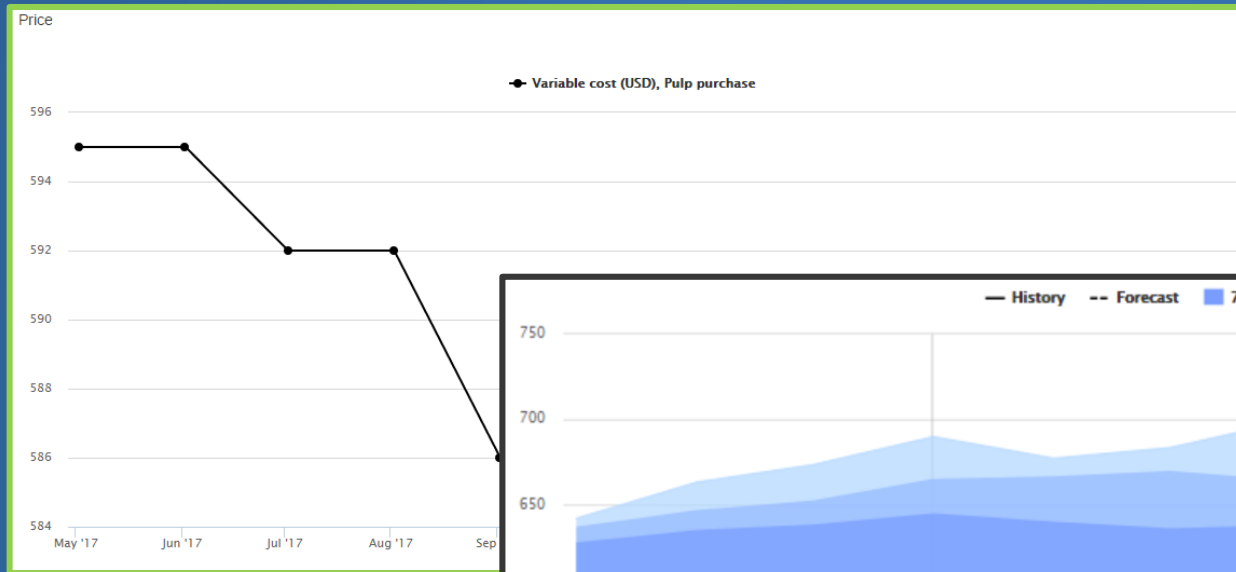
V: Volume
P: Price
C: COGS (Cost of goods sold)
F: Fixed costs

- Pulp Cost: What are the best estimate for standard deviation?
  - Historical standard deviation?
  - RISI or Hawkins Wright?

# Forecast

– without uncertainty / price risk

– with uncertainty / price risk (4%)

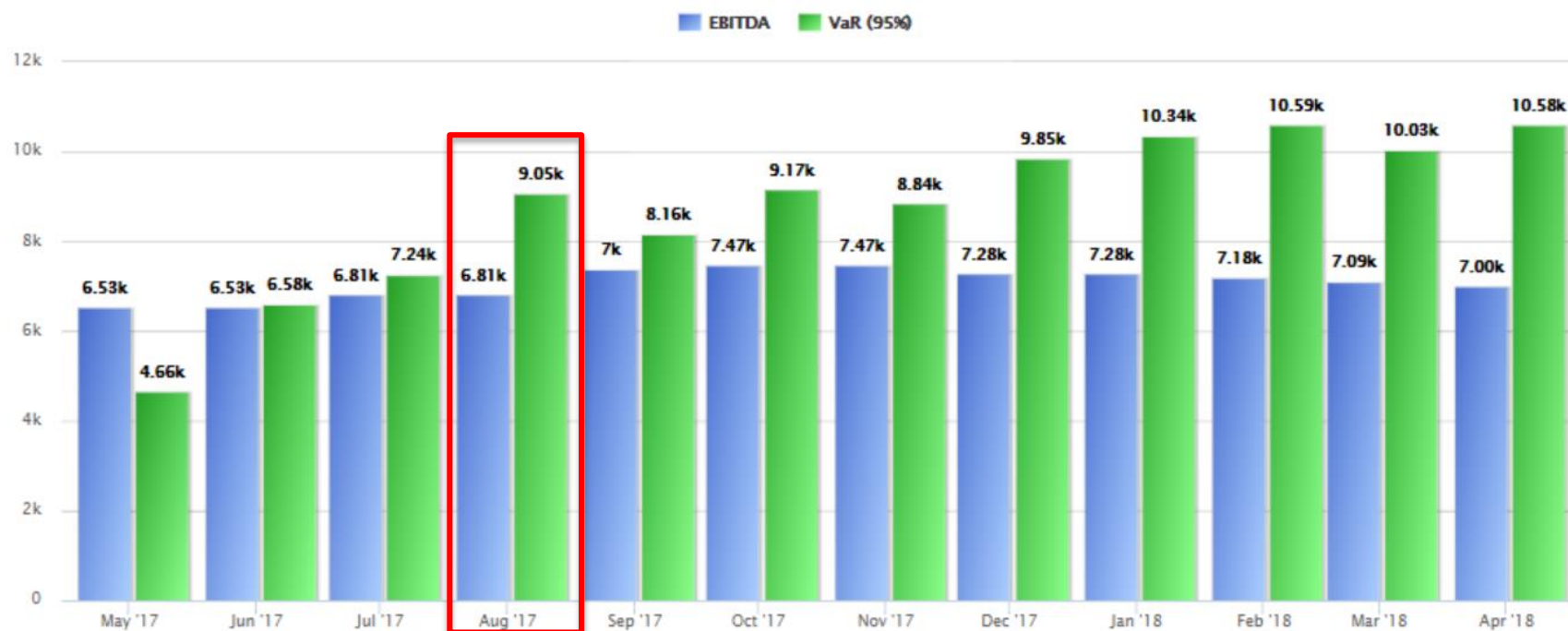


In this example we have assumed 4% periodic standard deviation. Standard deviation is a measure of how much variation is assumed to exist from the average expected value. Reference: <http://www.macroption.com/is-volatility-standard-deviation/>

# EBITDA & VaR

– Unhedged

EBITDA & EBITDA VaR



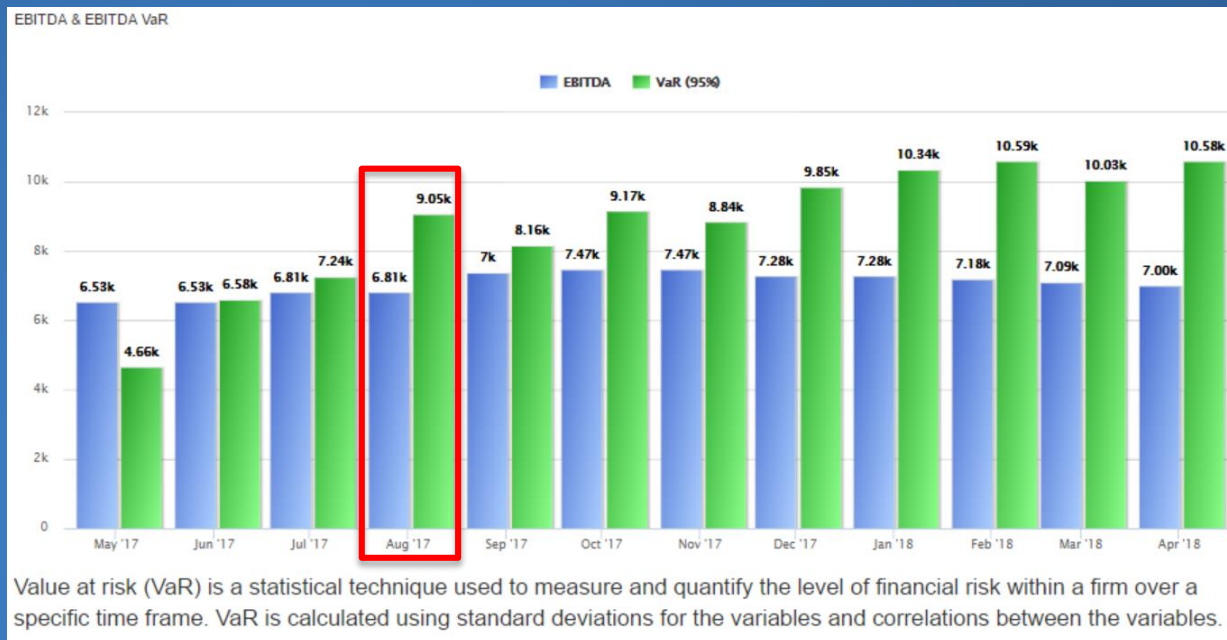
Value at risk (VaR) is a statistical technique used to measure and quantify the level of financial risk within a firm over a specific time frame. VaR is calculated using standard deviations for the variables and correlations between the variables.

# EBITDA & VaR

– Unhedged

August 2017

- Expected EBITDA 6,81 + VaR 9,05 = 15,86
- Expected EBITDA 6,81 - VaR 9,05 = -2,24
- Is that level of risk sustainable in your organization?



# Hedge future pulp cost uncertainty

-At NOREXECO Exchange buy 50MT in May, June, July and August

Commodity Forecast

Fixed contracts

Historic

Currency setup

Market

Derivatives

Monte carlo / Risk

Report

Derivatives

Info

Save

Derivatives

Include

Commodity forwards

Include

Currency forwards

No

Currency options

No

Commodity forwards

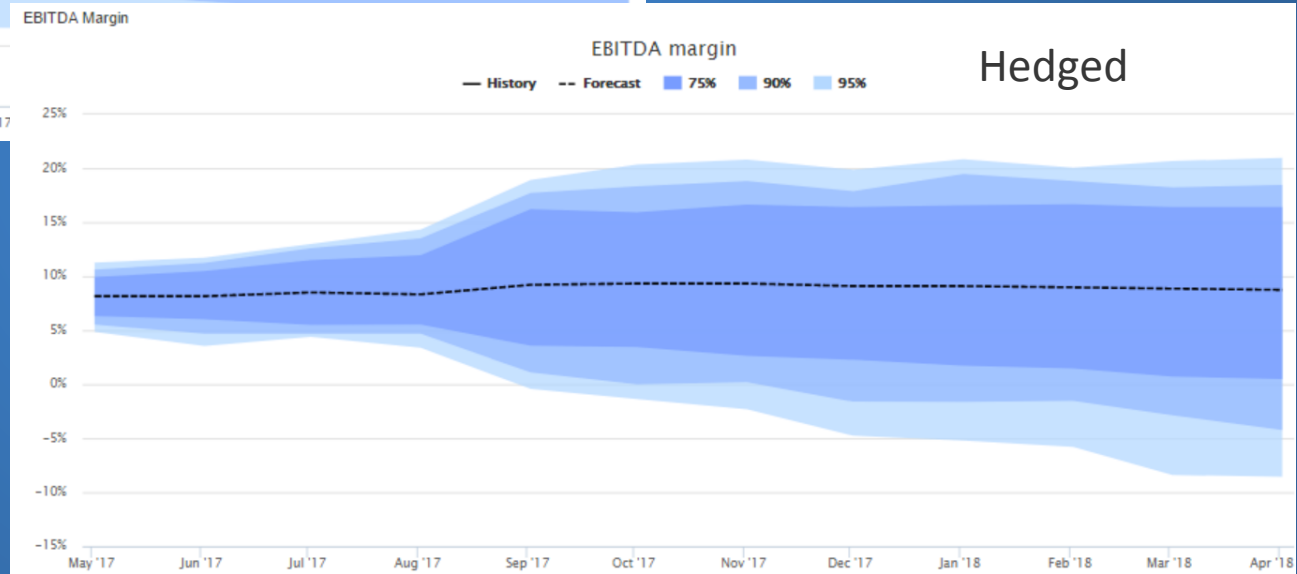
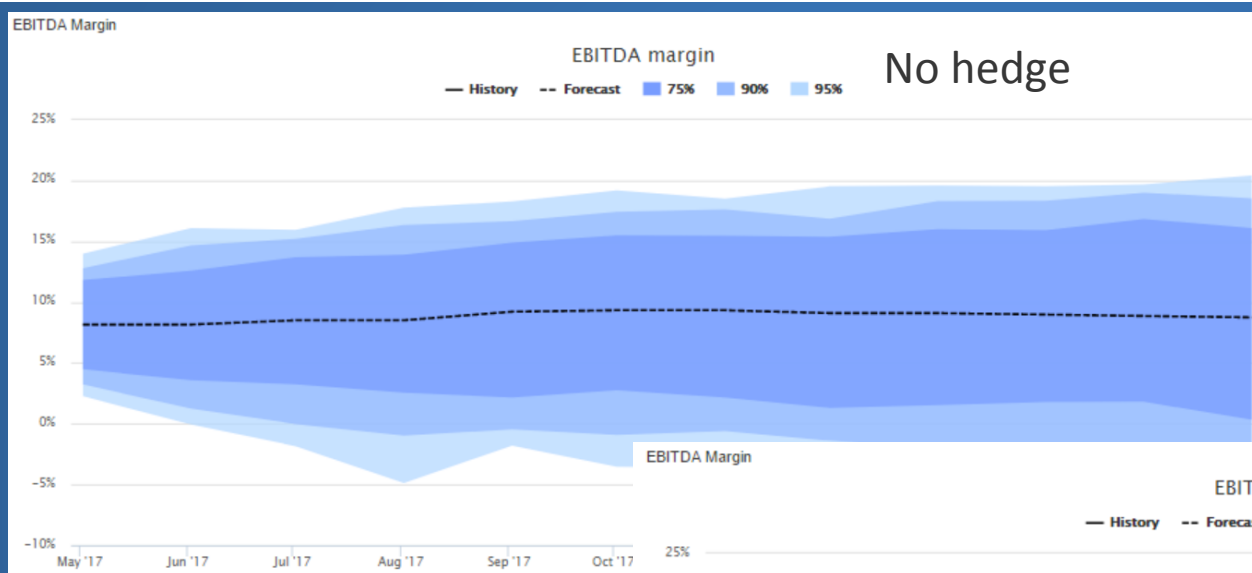
Delete

Save

FWD	Include	Product	Accounting	Commodity	Comment					
1	Yes	Pulp purcl	HA: COG:	COGS	Hedge # 1					
Volume		May-2017	Jun-2017	Jul-2017	Aug-2017	Sep-2017	Oct-2017	Nov-2017	Dec-2017	Jan-2018
Price		50	50	50	50					
		595	595	592	595					

# EBITDA Margin / Effects of hedging

- Increased predictability



# The effects of hedging

- Increased predictability







The Exchange for Renewables



Thank you for your attention;

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# Back-up slides

## Example Paper producer :

In order to hedge future cost, a paper producer buys a future contract at NOREXECO for the period June 2017, volume = 10.000 mt at USD 650

- Situation 1
- By end of June the average of the weekly FOEX PIX has increased to USD 700,-
- The average of the pix is higher than the purchased future contract
- The paper producer pays marked price for pulp  $700 \times 10.000 = \text{USD } 7.000.000,-$
- Then the paper producer receives from NOREXECO the difference between average FOEX PIX price and agreed future price  $(700-650) \times 10.000 = \text{USD } 500.000$
- Net cost for the Paper producer =  $\text{USD } 7.000.000 - 500.000 = \text{USD } 6.500.000,-$  or 650 USD/ton

### Situation 2

- By the end of June the average of the weekly FOEX PIX has declined to USD 600,-
- The FOEX PIX then is lower than purchased future price
- The paper producer pays market price for pulp  $600 \times 10.000 = \text{USD } 6.000.000$
- The paper producer then pays NOREXECO the difference between the average of the FOEX PIX price, and the agreed future price =  $(700 - 650) \times 10.000 = \text{USD } 500.000,$
- Net cost for the paper producer =  $\text{USD } 6.000.000 + 500.000 = \text{USD } 6.500.000,-$  or 650 USD/ton

**Conclusion: Independent of market direction the paper producer pays USD650 / mt  
- thus the desired predictability of cost is secured**

# Initial and variation margin

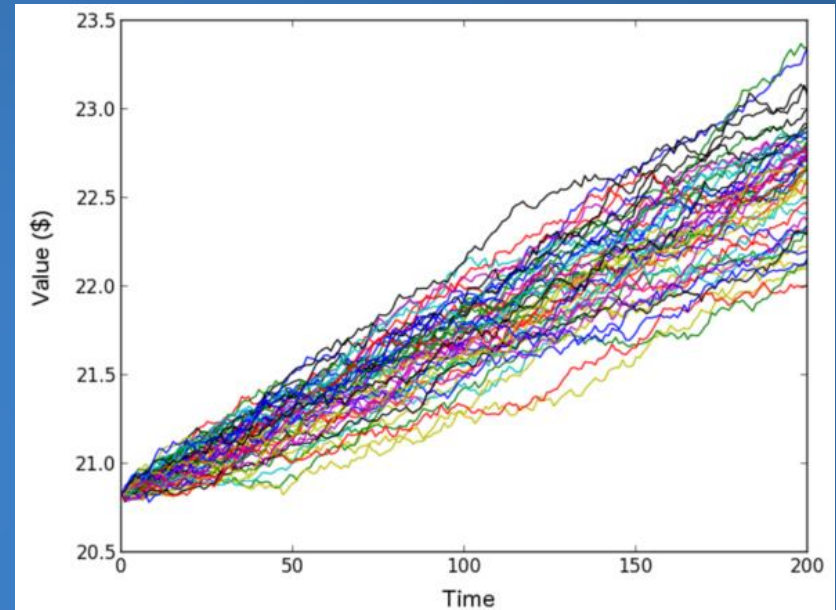
- Initial Margin:
  - A deposit for potential future negative changes in portfolio value
  - Shall cover losses in case of default
  - Returned after position is closed
- Variation Margin:
  - Is equal to the changes in portfolio value from one day to another.
  - Nets out changes in value from one day to another
  - No mountain of credit risk



# What is a Monte Carlo Simulation

How does it work:

- <http://www.investopedia.com/terms/m/montecarlosimulation.asp>



# What Drives Commodity Risk Towards Exchanges?

- Improving Financial predictability by hedging / mitigate price risk

- Mitigating price risk increases stability in earnings and cash flow
  - All other things equal, share price volatility is reduced
  - Which makes the share more attractive as an investment
  - Thus, all other things equal, share price tends to increase

Source: Harri Taittonen, Head of Equity Research Nordea

