# TRADING SIMULATIONS

**01 - Market analysis**
Simulation
Process data, interpret news and analyse the price development.

**02 - Screen-based trading**
Simulation
Transact by hitting a bid or lifting an offer versus the submission of an order.

**03 - Futures trading - Speculation**
Simulation
Make as much money as you can buy transacting.

**04 - Exchange trading - Fees, margin & P/L**
Simulation
Position management: Set up a futures position at an exchange and monitor your financials.

**05 - Value at Risk**
Simulation
Monitor your market risk; analyse the value at risk (VaR) position.

**06 - Forward curve**
Simulation
Analyse the forward curve over time; master its dynamics.

**07 - Options - Call option**
Simulation
Setup a call option position of one contract and see what happens to its price when the underlying futures contract price changes.

**08 - Options - Put option**
Simulation
Setup a put option position of one contract and see what happens to its price when the underlying futures contract price changes.

**09 - Option trading - Speculation**
Simulation
Transact options and try to make money, as much as you can.

**10 - Option arbitrage & synthetics**
Simulation
Setup an arbitrage strategy; using synthetics.

**11 - Option strategies**
Simulation
Set up various option strategies.

**12 - Options - The Greeks**
Simulation
Analyse the Greek variables of option positions.

**13 - Options - Delta-hedging**
Simulation
Dynamically hedging an option position (strategy or portfolio) with the underlying futures contract.

**14 - Oil - Quality spread**
Simulation
Trade the Brent–WTI quality spread.

**15 - Oil - Location spread**
Simulation
Trade the fuel oil location spread between Rotterdam & Singapore.

**16 - Oil - Time spread**
Simulation
Hedge (gasoline) storage capacity and lock in a nice margin.

**17 - Oil - Crack spread**
Simulation
Master the dynamics of various crack spreads and perform market risk management.

**18 - Oil - Asset-backed trading**
Simulation
Dynamically hedging of oil refining capacity.

**19 - Gas - Quality spread**
Simulation
Trade the natural gas quality spread.

**20 - Gas - Location spread**
Simulation
Trade the natural gas location spread

**21 - Gas - Time spread**
Simulation
Hedge gas storage capacity and lock in a nice margin

**22 - Coal - Quality spread**
Simulation
Trade the coal quality spread.

**23 - Coal - Location spread**
Simulation
Trade the coal location spread.

**24 - Power - Location spread**
Simulation
Trade the electricity location spread.

**25 - Power - Spark spread**
Simulation
Master the dynamics of various spark spreads with different ratios.

**26 - Power - Asset-backed trading**
Simulation
Dynamically hedging a gas-fired power plant.

**27 - Agricultural - Soft commodities**
Simulation
Set up an agricultural futures position at an exchange and monitor your financials.

**28 - Agri - Corn futures**
Simulation
Make as much money as you can buy transacting.

**29 - Agri - Wheat futures**
Simulation
Make as much money as you can buy transacting.

**30 - Agri - Soy crush spread**
Simulation
Master the dynamics of various crush spreads, which concern hedges of soybean crusher capacity.

**31 - Agri - Asset-backed trading (soy value chain)**
Simulation
Dynamically hedging of a soybean crusher.

**32 - Metals - Gold trading**
Simulation
Transact gold contracts in the futures market.

**33 - Metals - Aluminium futures**
Simulation
Transact aluminium futures in the market.

**34 - Metals - Steel futures**
Simulation
Transact steel futures in the market.

**35 - Metals - Copper futures**
Simulation
Transact copper futures in the market.

**36 - FX market**
Simulation
Currency exchange rates in the FX market.

# CONTENTS

## Forward curve



## Bought

| 1x | Future Feb 2021<br>75.08 per unit | 00:12:80 |
| 1x | Future May 2021<br>75.09 per unit | 00:11:20 |
| 1x | Future Apr 2021<br>75.09 per unit | 00:09:60 |

## Sold

| 1x | Future Dec<br>74.88 per unit | 00:12:80 |
| 1x | Future Apr 2021<br>74.89 per unit | 00:11:20 |
| 1x | Future May 2021<br>74.89 per unit | 00:09:60 |

## News flash

Pandemia: demand for commodities down due to unstoppable virus.

Economic recovery in Europe more significant than expected.
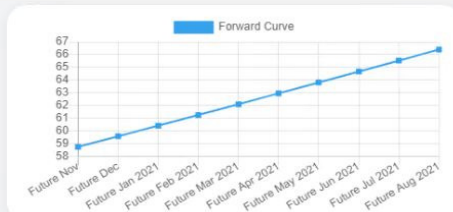
Success of piece corps in Africa, piece agreement in Middle East and stable policies in South America incentivise global economy.

Series of technological developments lead to significant increase of commodity production soon.

IMF expects global economy to be stronger than earlier analysis indicated.

Social unrest seems to spread globally; strikes, rebellion and riots

| Product | Qty | Bid | Ask | Qty | Position |
|---|---|---|---|---|---|
| Future Nov | 7 | 62.78 | 62.98 | 11 | 0 |
| Future Dec | 16 | 63.46 | 63.66 | 10 | 0 |
| Future Jan 2021 | 14 | 64.14 | 64.34 | 1 | 0 |
| Future Feb 2021 | 10 | 64.82 | 65.02 | 19 | 0 |
| Future Mar 2021 | 9 | 65.50 | 65.70 | 15 | 0 |
| Future Apr 2021 | 7 | 66.19 | 66.39 | 2 | 0 |
| Future May 2021 | 4 | 66.87 | 67.07 | 19 | 0 |
| Future Jun 2021 | 2 | 67.56 | 67.76 | 10 | 0 |
| Future Jul 2021 | 2 | 68.25 | 68.45 | 17 | 0 |
| Future Aug 2021 | 17 | 68.93 | 69.13 | 5 | 0 |





## Financial statement

| Working capital | 597.52 |
|---|---|
| Exchange fees | 0.10 |
| Clearing fees | 0.10 |
| Initial margin | 0.00 |
| Variation margin | 0.00 |
| Unrealized P/L | 0.00 |
| Realized P/L | -2.28 |
| Liquidation value | 597.52 |

## Risk report

| Correlation (risk offset) | 0.95 |
|---|---|
| Value at Risk | 0.00 |

## Crack spread



Crude oil → Gasoline
Crude oil → Heating oil

### Bought

| | | |
|---|---|---|
| 1x | **Crude oil Nov** 70.81 per unit | 00:13:00 |
| 1x | **Crude oil Nov** 72.26 per unit | 00:11:50 |
| 1x | **Crude oil Nov** 71.12 per unit | 00:09:50 |

### Sold

| | | |
|---|---|---|
| 1x | **Heating oil Nov** 1.76 per unit | 00:15:50 |
| 1x | **Gasoline Nov** 1.89 per unit | 00:14:00 |
| 1x | **Heating oil Nov** 1.72 per unit | 00:12:50 |

### News flash

African peace corps are standing by Shell in Nigeria to avoid sabotage.

The explosion at a Russian oil production site turns out to be a 'joke'. Bad humor turns out in discharges.

The new oil minister of Russia said to increase Russia's oil production at once.

Due to extreme cold weather at the Northern hemisphere, people make use of heating which requires lots of energy, ranging

### Spread display

 #1

ratio   3:2:1
12.56
$/bbl

 #2

ratio   5:3:2
12.13
$/bbl

 #3

ratio   2:1:1
11.50

| Product | Qty | Bid | Ask | Qty | Position |
|---|---|---|---|---|---|
| **Crude oil Nov** | 17 | 80.92 | 81.12 | 17 | 3 |
| **Gasoline Nov** | 19 | 2.18 | 2.38 | 11 | -3 |
| **Heating oil Nov** | 12 | 2.03 | 2.23 | 17 | -3 |



---

## Options



### Bought

| | | |
|---|---|---|
| 1x | **Call (X=60) Aug 2021** 5.39 per unit | 01:09:00 |
| 1x | **Call (X=60) Aug 2021** 4.72 per unit | 01:07:50 |

### Sold

| | | |
|---|---|---|
| 1x | **Call (X=60) Aug 2021** 9.78 per unit | 00:13:50 |
| 1x | **Put (X=60) Aug 2021** 7.47 per unit | 00:12:50 |
| 1x | **Future Aug 2021** 59.88 per unit | 00:07:00 |

### News flash

Economic recovery in Asia is slowing down dramatically; Nikkei and Hang Seng indices both down 6%.

IMF expects global economy to be stronger than earlier analysis indicated.

Terrorists attacks disrupt economy and interrupt transport.

Pandemia: demand for commodities down due to unstoppable virus.

Strong fundamentals for commodity markets.

Series of technological developments lead to significant increase of commodity production soon.

| Product | Qty | Bid | Ask | Qty | Position |
|---|---|---|---|---|---|
| **Future Aug 2021** | 18 | 52.52 | 52.72 | 14 | 0 |
| **Call (X=60) Aug 2021** | 12 | 5.10 | 5.30 | 17 | 3 |
| **Put (X=60) Aug 2021** | 6 | 11.60 | 11.80 | 17 | 0 |



| Risk | General |
|---|---|

**Sensitivity Analysis**

| | |
|---|---|
| Δ Delta | 5.34 |
| Γ Gamma | 0.04 |
| ν Vega | 5.46 |
| Θ Theta | -0.64 |
| Ρ Rho | 10.09 |

# COPYRIGHT & INTELLECTUAL PROPERTY

Entrima concerns the developer, publisher, operator and copyright holder of the Online Trading Simulations. Entrima possesses the intellectual property of the Online Trading Simulations.
Save for legal exceptions, nothing in these simulations may be copied and/or made public without the written consent of the owner of the copyright and publisher of the simulations.

# DISCLAIMER

The simulation environment allows users to run simulations in the field of trading in wholesale markets for physical products, such as commodities and energy, and financial instruments. Any of these simulations concern a simplification of reality. Users run a dummy account; the trading simulations do not involve a real market, nor real money.

No rights can be claimed from the simulations and the participation by a user. The developer, publisher, operator and/or copyright holder(s) cannot be held responsible. In no way, developer, publisher, operator and/or copyright holder(s) can be held liable for consequences of this simulation.

The simulations are a simplification of reality. Hence, the information provided brings along limitations. In general, no conclusions can be drawn on the basis of the simulations, its scenarios and the results of the users. Results achieved do not assure any (positive or negative) future performance, not during the simulations, nor in real life. The trading simulations, including the information provided, scenarios reflected and results achieved, are not intended as trading advice, nor as a recommendation for making particular investments, submitting certain orders, entering into specific transactions or positions, or performing certain business activities.

Furthermore, the simulations do not provide legal advice. All content is provided on 'best effort' and 'best knowledge' basis. The developer, publisher, operator and/or copyright holder(s) do not accept liability for any views expressed as to the legal application of any law or its implementation. The developer, publisher, operator and/or copyright holder(s) have allocated their expertise and experience to develop and produce simulations which can be considered to be based on 'best efforts'.

Whilst every effort has been made to ensure that the information contained in the simulations is correct (or as realistic as possible) and that there are no errors or omissions, no responsibility is accepted as to the accuracy or completeness of the statements, facts and examples included herein, and no liability is accepted whatsoever on the part of the developer, publisher and operator and/or copyright holder(s) for any loss or damage whatsoever, howsoever caused, arising from the use of the simulations. Although the content and context of the simulations have been put together with the greatest care and attention, no liability can be accepted for incompleteness or unrealistic aspects or scenarios, interim changes in the information, or for possible mistakes.

This document must be considered in conjunction with the document "**General Terms & Conditions** (*for individuals & organisations concerning Entrima's Online Trading Simulations)*".

ENTRIMA

TRADING SIMULATIONS

PART I:

# GENERAL INFORMATION
*SUITABLE FOR ANYONE*

## CHAPTER 1:
## TOOL BOX – *TRANSFORM KNOWLEDGE INTO SKILLS*

Entrima's Trading Simulations provide any user an excellent tool box to apply what one knows, to apply what has been learnt, to leverage on one's experience, to extend one's skills, to optimise one's existing competences and to perfection expertise, all in the field of markets, market working, price formation and trading (trading strategies and trading technicalities).

The Trading Simulations mimic market dynamics and trading activity. A user can perform screen-based trading, via a front-end trading system (replicating both OTC trading and exchange-trading), as well as by responding to telephone calls, either based on a dedicated assignment or free format (in any role of choice).

The Trading Simulations cover the trading in various products, such as metals and agricultural products, as well as fossil fuels and electricity, plus futures and options based thereon. This form of gaming teaches how, in a trade organisation, front, middle and back office activities relate to each other. It also shows the significance of ICT, indicating mission critical business processes.

The Trading Simulations offer users an extension of Entrima's online training services as they are complementary to what can be learnt in Entrima's online Training Courses (self-study). The Trading Simulations can also be used as preparation for online examination.

## CHAPTER 2:
## TARGET GROUPS – *TRADERS & NON-TRADERS*

The simulations are suitable for various target groups, including the following:

- In <u>general</u>:

  - **Any professional** with a profession in or relating to the traded markets

    - ❖ Any person who wants to know more about markets and trading

- In <u>particular</u>:

  - **Professionals with a business function**

    - ❖ Brokers
    - ❖ System operators
    - ❖ Balancing responsible persons
    - ❖ Dispatchers & Shift traders
    - ❖ Asset & portfolio traders
    - ❖ Proprietary traders
    - ❖ Originators

  - **Professionals with a control function**

    - ❖ Regulators
    - ❖ Auditors
    - ❖ Risk managers
    - ❖ Trade compliance officers
    - ❖ Trade surveillance experts at trading firms, venues & brokerage firms

  - **Professionals with a support function**

    - ❖ Back office staff (including Settlement officers, Confirmation officers)
    - ❖ Finance professionals (including Controllers)
    - ❖ ICT specialists (including Application managers, Data managers)
    - ❖ HR experts
    - ❖ Accountants
    - ❖ Legal advisors

## CHAPTER 3:
## STUDY ADVICE – *RECOMMENDATIONS*

Our study advice is based on a well-thought plan of education which relies on our extensive experience as a provider of learning services. Nevertheless, the advice concerns a recommendation, certainly not a must. Our study advice is as follows:

For **non-traders** (hence, any professional operating in or relating to the wholesale markets):
- o <u>Starters</u>:
  - You are advised to follow the first simulations (nr. 1-15), consecutively. This way, you are guided to master basic concepts, processes, technicalities and related terminology. This way, you also learn about trading technicalities and, thus, how, you can transact, as well as how to read all reflected data and graphical representations. Hereafter, you should be ready to follow any other simulation.
- o <u>Advanced</u>:
  - You are advised to follow any simulation of preference, possibly concerning a specific commodity, and eventually regarding a particular activity or strategy. This way, you can extend your knowledge base, or apply what you already have learnt.

For **traders**:
- o <u>Starters</u>:
  - New recruits can use the simulations to kick-start their career. You are advised to follow the first simulations (nr. 1-15), consecutively. This way, you are guided to master basic concepts, processes, technicalities and related terminology. This way, you also learn about trading technicalities and, thus, how, you can transact, as well as how to read all reflected data and graphical representations. Hereafter, you should be ready to follow any other simulation.
- o <u>Advanced</u>:
  - You can follow any simulation of preference, but especially those on 'Options' may be very informative. These simulations allow you to master this type of derivative and its pricing, as well as the related risk parameters (Greeks). This knowledge can be applied to trade the products, as well as to model flexibility embedded in supply contracts and physical capacity.

As the Trading Simulations are provided at different levels, embedding different layers of complexity, a certain minimum understanding of markets and trading is very desirable. In order to master the concepts and processes plus related terminology, which are covered by the simulations, users are recommended to follow Entrima's Online (Self-study) Courses. The following online Online Courses are of direct relevance for the simulations:

- Commodities

- Commodity markets
- Commodity pricing
- Exchange-trading
- OTC trading
- Reasons to transact
- The central order book
- Order types
- Liquidity
- Clearing
- Margining
- Settlement
- Derivatives – Introduction
- Derivatives – Position management
- Options – Introduction
- Options – Hedging exposures
- Options – Greek variables
- Flexibility
- Spreads & spread trading

To get most out of the Trading Simulations, a user is recommended to have mastered the topics and themes indicated by the online courses above. These concepts, activities and processes, plus related terminology are of utmost relevance.

# CHAPTER 4:
# **DIFFERENT LEVELS** *– SUITABLE FOR ANY TARGET GROUP*

Entrima's Online Trading Simulations include numerous simulations, amongst others, to master generic knowledge about markets and trading (for starters), as well as to master specifics and in-depth expeetise (for advanced professionals).

Next the Online Trading Simulations can be run at different speed levels, so that they are suitable for different target groups (starter, experienced, expert):

1. Slow market
2. Medium market
3. Fast market

The level indicates the density of data to be handled (per time unit) and, thus, the speed of information processing.

## CHAPTER 5:
# DIFFERENT PRODUCTS – *SUITABLE FOR ANY TARGET GROUP*

Entrima's online Trading Simulations include numerous simulations, amongst others, concerning different products, so that they are suitable for different target groups:

As a user, you choose the products you want to trade. A selection can be made amongst a large variety of products, including the following:

- Products

  o **Derivatives**

    - Supply contracts
    - Term contracts
      - Forwards
      - Futures
    - Option contracts

  o **Underlying commodity**, amongst others:

    - Corn, wheat
    - Soybeans, soybean meal, soybean oil
    - Gold
    - Copper, steel, aluminium
    - Oil (crude & refinery products)
    - Gas
    - Coal
    - Electricity

  o **FX**

    - USD
    - GBP
    - EUR

## CHAPTER 6:
## LEARNING OBJECTIVES – *WHAT IS IN IT FOR YOU?*

The Online Trading Simulations allow professionals to master various aspects and elements relating to wholesale markets and trading. One will master concepts, processes and terminology.
The aims of the Online Trading Simulations are manifold. It includes to familiarise with order submission, order matching, price formation, market analysis and price forecasting, trading strategies, trading technicalities, position management, clearing, settlement, margining, transaction cost, order types, risk management, value at risk, the Greek variables, and many more topics and themes.

The bundle of trading simulations includes the following learning objectives:

- **Master basic processes & concepts** – *Including related terminology & related aspects*
    - The trading environment
    - The trade process & the contract lifecycle
    - Straight through processing (of orders and deals)
    - The decision-making process, psychology of markets and handling emotions
- **Become an expert in trading**
    - Transacting or deal-making (buying & selling)
    - Open a position & close a position
    - Order types, plus order submission, processing and matching
    - Hitting & lifting
    - Market making & market taking (the role of initiator versus aggressor)
- **Learn about position management**
    - Long/short (master short selling)
    - Netting (multilateral)
- **Conquer types of product**
    - Forwards, futures & options
    - Spreads (cross-commodity spreads, time spreads, location spreads)
- **Assure your expertise in pricing**
    - Price formation, order book and bid & ask
    - Market liquidity
    - Price volatility
- **To familiarise with the look & feel of screen-based trading.**
    - What is shown on a screen? And which details matter most?
    - Analyse what bid or ask stands for
- **Master the working of an order book**
    - To analyse the bid-ask spread
    - To observe market depth
- **Master OTC trading and the usances in bilateral deal-making, including:**
    - Master agreement, credit risk management (limits) & the role of inter-dealer brokers
- **Overcome exchange-trading**

- o Clearing
- o (Cross-)margin
- **Learn about risk management**
  - o Value at risk (VaR)
  - o Price correlation
  - o Greek variables (Delta, Gamma, Vega, Theta, Rho)
- **Perform market analysis**
  - o Processing data &, news as well as price forecasting
  - o Fundamental analysis, technical analysis, quantitative analysis, psychological analysis
- **Price chart analysis**
  - o Dynamic graphical representation of the price development
  - o Charting: Support & resistance lines, as well as confirmation & reverse patterns
- **Forward curve analysis**
  - o Static graphical representation of prices of contracts with a different time-to-maturity
  - o Contango & Backwardation
  - o Cost of carry
- **Master FX trading**
  - o Exchange one currency position for another currency position, as you like
  - o Monitor FX rate developments and the impact of it for deal-making
  - o Provide price quotations & learn about FX exchange rates
  - o Experience inter-bank transactions
- **Become an expert in timing**
  - o For any market participant, timing is essential; it will impact the financial performance.
- **Learn how to optimise the financial performance**
  - o Experience future cash flows are margins can be assured
- **Interpret result – *Understand the financial statement***
  - o Take into account relevant aspects in order to qualify or to quantify the performance:
    - ➢ Direct transaction costs (fees), as well as indirect transaction costs (slippage)
    - ➢ Profit & loss (P/L), realised *(after liquidation)* & unrealised *(open positions; M-to-M)*
  - o The process of (cash) collateralisation
    - ➢ Deposits *(initial margin + variation margin)*
  - o Cash management
    - ➢ Finance liquidity & working capital
  - o Identify transaction cost
    - ➢ Exchange fee & clearing fee
- **Learn about trading psychology** (mental management)
  - o Experience the gaming effect - Experience stress & adrenaline due to market dynamics
  - o Experience a profit, but also a loss; hence, an a-symmetric mental experience
  - o Experience the market going against your position
  - o Perform multi-tasking

# CHAPTER 7:
## SUBSCRIPTION *– GROUP & INDIVIDUAL*

You can either register yourself or a group of people, so that you or the group are/is provided access to the Online Trading Simulations and can act in the capacity of a market participant.

- **Individual**
  An individuals can register himself/herself via our website (www.entrima.org). The service concerns a so-called pay-as-you-go service. Payment can be performed per credit card, upon which login details are provided instantly, so that you can run the Online Trading Simulations immediately.

- **Group**
  Sign up a group via info@entrima.org. Provide us with your details (name, organsiation, email address, VAT number and PO number), so that we can provide you with an agreement which has to be formalised after which we send you the invoice and provide your group access to the simulation environment.

TRADING SIMULATIONS

PART II:

# TECHNICAL DETAILS
*USER INSTRUCTIONS*

## CHAPTER 8:
# BROWSER-BASED SOLUTION

The simulations concern an application that is based on the latest internet technology. It runs the best and smoothest in modern webbrowser and is optimised for Google Chrome. If you are using another browser and if you are facing any issue, please be so kind to inform us with the following notifications:

- On what kind of device are you using our application? Desktop, laptop, tablet or mobile phone.
- What operating system do you use? Windows, IOS, Android or other?
  - If other, which?
- What browser did you use on your device mentioned above? Safari, Edge, Firefox, Internet Explorer, Opera, other?
  - If other, which?
- What went wrong?
- Do you have anything else to report?

## CHAPTER 9:
# GENERAL INTRODUCTION – *MARKET DYNAMICS*

For any user of the Trading Simulations, the following aspects are relevant. It concerns an understanding of the concept of 'market working' (hence, the functioning of markets), as well as price formation:

- Only from hindsight one knows whether a decision to buy or sell (or to do nothing) has turned out to be preferred. However, it is realistic that trading decisions have to be made facing uncertainty about future scenarios.

- Pricing in markets is based on actions of market participants. The price in a traded market should reflect the (fair and competitive) interplay between supply and demand. Where supply and demand meet, an equilibrium appears. This equilibrium, however, is just the equilibrium that (possibly only) applies to that specific moment in time. Sometime later (maybe even a split second later) the equilibrium may be achieved at another price level. As a result, constant attention is required. Rapid action may be desirable; although, sometimes, patience should prevail. Actually, normally, it depends on whether one has to buy or sell (or whether one just wants to do so), and whether the market is (expected) to move, or not, and, if so, whether it is expected to go up or down.

- Whether the price in a market will move up or down, or move sideways, is not known upfront, neither to what extent, nor when. Consequently, forecasting may be desirable; it is typically based on thorough analysis. Analysis includes the processing of data and news, as well as the interpretation of information. Amongst others, analysis can be performed by fundamental analysis, technical analysis, statistical analysis and psychological analysis.

**CHAPTER 10:**
**PERSPECTIVES** – *YOUR ROLE & RESPONSIBILITIES*

Upon application of the simulations you can act in different capacities. What role do you play? What are your tasks or responsibilities? In reality, this should be formulated on beforehand, so that one will perform better, while, with the simulations, you should choose what you prefer to learn more effectively. In most cases, you are suggested a role and explained what is expected of you. If you'd rather selelct a role yourself, then, amongst others, you could imagine the following perspective(s) for yourself (all of these are covered by our suggestions/instructions anyhow):

- **Initiator** ('*Market maker*') or **Aggressor** ('*Market taker*')
  A market participant either acts as initiator or market maker or as aggressor or market taker.

  o **Initiator** *(market maker)*
    A market maker is assigned by a trading venue (e.g. an exchange) to provide bids and offers during the trading session more or less constantly. In other words, a market maker initiates buying orders and selling orders simultaneously. Hence, a market maker is a liquidity provider or 'initiator'.

  o **Aggressor** *(market taker)*
    A market taker, on the contrary, is a market participant who does not initiate orders but, instead, reacts or responds to the action of (a) so-called "initiator(s)". Hence, market takers act in the role of a so-called "aggressor".

- **Hedger** *("Asset & portfolio trader")*, **Investor/Speculator** *("Proprietary trader")* or **Arbitrager**
  In the simulations, you either take the role of hedger, or as an investor or speculator, and in some simulations, even as arbitrager.

  o **Investor / Speculator**
    As an investor / speculator, your aim is simply to make as much money as possible. This takes place by creating an exposure. In such a capacity, obviously, after having opened a position you need to close it to realise a financial result.
    Proprietary trading concerns trading for one's own account (i.e. the company account), and at one's own risk (being the company's risk).

  o **Hedger**
    As a hedger, you are exposed to market risk. This exposure results from having entered into a position, namely an asset. The asset may concern a financial asset or a physical asset. In other words, if one has entered into a (supply or derivatives) contract (being a financial asset), or if one has acquired (production, consumption, processing, storage or transport) capacity (being a physical asset), then, one is exposed to market risk. This risk has to be managed by entering into an off-setting position in (a) contract(s). This

explains why transactions have to be performed.

> *Note:*
> *Physical assets are characterised by input of a commodity and output of a commodity. The input commodity may differ from the output commodity (for instance, in case of processing capacity, such as an oil refinery or a soybean crusher, or combined production and consumption capacity, such as a gas-fired power plant), or it may concern identical commodities, but input and output do not take place at the same location, (transport capacity), or not at the same time (storage capacity).*

By trading on the basis of having an asset and hedging the related exposures, one actually performs "asset-backed trading".

o **Arbitrager**
Arbitrage can be performed in case of a mispricing, by buying one product and selling another simultaneously, thereby locking in the price differential. One should buy the underpriced product and sell the overpriced product.

**CHAPTER 11:**

# TECHNICAL ASPECTS OF RELEVANCE – *FUNCTIONALITY & TECHNICALITIES*

The following technical aspects are of relevance before/when running a trading simulation:

- **Audio**
  Turn on your sound to enable verbal notification, including alerts, comments or remarks. The simulations include verbal instructions or information, as well as sounds to signal specific trading actions or market activity.

- **Timer**
  The simulation lasts for only a few minutes, simulating an entire trading day, or an even longer period of time. A timer indicates how much time has passed or how much is left. The latter simulates the remaining trading hours. During this period the market is open for deal-making and/or order submission, cancellation or matching.

- **Pause**
  Though unrealistic, as a real market cannot be paused, the Trading Simulation can be halted, by the PAUSE function (top of page, next to the 'Timer'). This allows a user to process data, news and other information, before continuing the simulation.

- **Trading screen**
  Once logged in, the simulation overview provides you with a list of simulations. After having selected a simulation (for instance based on the study advice; see dedicated section), you are invited to select how fast you'd like to process data (market speed: fast/medium/slow). Upon your selection the simulation starts and you can enter the market.

- **Market participants**
  You are not the only market participant; there are others as well. It is realistic to assume that the others have already placed orders and, possibly, already have transacted when you enter the market (when you start to run the simulation).

- **Order book**
  In the (central) order book pending orders of all market participants (orders to buy and orders to sell) are awaiting their execution. It concerns limit orders that cannot be matched with any other order (yet).

- **Position management**
  At the start of the simulation, you do not have any position. Hence, as soon as you transact (e.g. a futures contract or an option contract) (either an open buy deal or an open sell transaction), a position arises (either long or short). At any time during the simulation, a number indicates your position (note: a position is per product, while a portfolio concerns all positions together). As soon as you transact, a position changes. The related number changes on a real-time basis; hence, your position alters instantly after each deal you do.

    *Note:*
    *A positive number indicates a long position, a negative number indicates a short position.*

- **News flashes**

News is automatically published upon appearance. You have to interpret the news and judge whether this will impact the market, and, if so, whether it will create upward or downward price pressure, and to what extent.

- **Graphical representations**

  Price information is represented numerical, as well as graphically. Graphically at least the following two types of representations are shown:

  - **Chart**

    A price chart concerns a graphical reflection of the price development (of a single product) over time. Time is reflected on the horizontal axis, while the price is shown on the vertical axis.

    Note: In some simulations the price development of two (or more) products are shown in the same figure.

  - **Forward curve**

    The forward curve concerns a graphical representation of market prices of a series of term contracts (all relating to the same commodity and identical delivery place) offset to their (remaining) time-to-maturity.

    Unlike a price chart, which develops dynamically, a forward curve is a snap shot of the market situation at a certain moment in time and, thus, it concerns a static picture. In the simulations, as much as in real-life, the forward curve is reflected over-and-over again, leading to a dynamic impression. Actually, continuously, an updated snap shot is shown.

- **Transacting**

  Buy and sell as many times as desired or needed, and as much volume as you'd like, but (apart from your role and objectives) please mind a possible position limit (a maximum of a certain number of units per product, long or short).

  - **Bid & Ask**

    Note that the "bid" price (in combination with the related quantity) and the "ask" price (in combination with the related quantity) reflect respectively a buying order of an initiator and selling order of an initiator (by the way, the bid and ask could come from just one initiator, but are typically from two different parties (or even more)).

    The orders are limit orders, pending in the so-called "order book", awaiting their execution.

    The simulations reflect reality (although in a simplified manner) in the sense that order execution can take place in two ways, namely by "order submission", as well as by "hitting and lifting". Order submission takes place via an order ticket (see below), while hitting & lifting is explained first (see right hereafter).

  - **Hitting & Lifting**

    Enter into a transaction by "hitting the bid"  ((left mouse) click on the 'bid' price) or "lifting the offer" ((left mouse) click on the 'ask' price).

    - **Hitting**

When you are "hitting a bid" you are accepting to become the counterparty of the pending purchase (buying) order of the initiator, implying that you -as aggressor- sell to the initiator. In reality, this is either for the entire volume or, when IT settings have been tailored, to a fixed (limited) quantity. In the simulations, one unit will be transacted when hitting.

- **Lifting**

When you are "lifting an offer" it implies your acceptance of becoming the counterparty of the pending sale (selling) order of the initiator, implying that you -as aggressor- buy from the initiator. In reality, this is either for the entire volume or, when IT settings have been tailored, to a fixed (limited) quantity. In the simulations, one unit will be transacted when hitting.

o **Order initiation** *(order ticket)*

Navigating your cursor on a price (either a 'bid' or 'ask'), followed by a right (not a left) mouse click, initiates the pop-up of an order ticket. After the order ticket has been launched, it can be altered (price level and/or quantity).  Therefore, before submitting, choose your settings (hence, select):

| Product | Qty | Bid | Ask | Qty | Position |
|---------|-----|-----|-----|-----|----------|
| **Future Nov** | 1 | 72.05 | 72.25 | 9 | 0 |

- ❖ **Product**
   - ➢ The product is reflected on the order ticket. With "product" the contract is meant. This could, for instance, concern a futures contract or an option contract. In case a range of those products is listed, it could be that it concerns contracts with almost identical specifications (such as identical underlying value, the same delivery location and similar other details), except for the expiration/maturity date or settlement moment/period. This is why the product descriptions include the maturity date or delivery moment/period.
   
     In case of variety of options, it often concerns an identical underlying value, but different strike prices, possibly in combination with different expiration dates.
- ❖ **Price**
   - ➢ The price of a limit order concerns a limit price. This implies it concerns the maximum buying price (in case of a buy order), or minimum selling price (in case of a selling order). A limit order, if executed upon submission, can be executed at their limit price, or at a better level (meaning, at a lower (higher) level in case of a purchase (sell) order). A pending limit order, if executed, is executed at its limit price.
- ❖ **Quantity**
   - ➢ Quantity concerns the volume of the order.

❖ **Order type**

In the simulations there are two order types possible. As a user you cannot change that.

➢ The order type which is automatically selected could concern a specific limit order, namely an '***immediate-or-cancel order***' (comparable to a '***fill-or-kill***' order, although that is not allowed to match partially). This type of order - once submitted- is either executed straight away, or, if matching is not possible (as it does not meet the current market conditions (bid/offer)), then, it is cancelled immediately (or simply technically impossible to submit at all).

➢ The order type which is automatically selected could concern a so-called (generic) '***(generic) limit order***'. Such an order can be submitted at any time. If it cannot be executed immediately, it will appear in the order book, awaiting its execution. You can find (and possibly cancel) your pending order(s) in the window "My orders".

In reality (not included in the simulations(yet)), on order tickets, the following is also often included:

❖ **Trading account**

➢ Here the name of the trader is reflected so that transactions are added to the "account" (or "book") of the relevant trader. This way, the internal account setup or so-called "book structure" is respected. It allows accounting to take place efficient and effectively. This way, the performance of individuals can also be measured.

❖ **Broker**

➢ Traders are only allowed to submit orders to an exchange trading platform if their company has a membership. Alternatively, they can trade on the exchange via the membership of a brokerage firms (assuming this broker has a membership). Routing an order via a broker, however, requires the trading firm to have a brokerage agreement in place with this brokerage firm.

## CHAPTER 12:
# LIMIT STRUCTURES – *YOUR MANDATE*

As a trader, you may face market regulations which you have to comply with. In addition, you have to respect the rules of the trading venues on which you act (e.g. exchange rulebooks). Furthermore, internally, the head of trading, the risk management department of the compliance function have installed regimes that must be taken into account. All-in-all, laws, rules, procedures, policies or codes set a framework in which one has to act. For the trading simulations the following applies:

- **Cash limit**
  The available amount of working capital is limited, also in real-life. Also with the simulations, you <u>cannot</u> allocate or spend more than your available working capital.

- **Position limit**
  You are <u>not</u> allowed to run a position (per product / contract) exceeding a certain amount of units (either 'long' or 'short'). This is automatically monitored and managed, so, trying to exceed it is of no use, as your actions will be blocked in an automated manner.

- **Risk limit**
  In real-life, a trader is typically <u>not</u> allowed to run a position whereby the value at risk (market risk) exceeds a certain level. With the trading simulations, you are expected (to a certain extent) to monitor or manage this yourself. Although, effectively, in a trading simulation, you may be limited by your working capital. As open positions on exchanges require a member to deposit margin, which is funded by your working capital, you cannot exceed a certain risk level.

## CHAPTER 13:

## REPORTING – *MARKET ANALYSIS & FEEDBACK ON YOUR PERFORMANCE*

In the Online Trading Simulations, reporting takes place during three sequential stages, namely 1. pre-trade, 2. during the simulation and 3. post-trade.

**Pre-trade reporting**
Before the simulation starts, or at the start, you are informed about various financials that you face as a market participant. After all, any trader is provided with a task and a mandate, as well as working capital (money). In other words, one has to know one's objectives, rules and how much money is available. Hence, one needs to know within what kind of framework one has to operate to achieve certain goals, meanwhile respecting the limits set by the organisation.

▪ **Working capital**
You are provided with working capital. In any case, the working capital is required to finance your trading activities. Your task, as a speculator or as an arbitrager, is to make it grow, while, as a hedger, you are supposed to allocate the capital optimally to fulfil your task.

> *Note:*
> *Any number in the simulation reflecting a sum of money can be considered in a certain currency of taste (e.g. USD, GBP, EUR, CHF or JPY). The simulations do not indicate this, to leave it open for the user's choice of preference.*
> *In addition, one is free to assume that all amounts of money represent or are reflecting fractions of multiples (e.g. thousands or millions).*

**Reporting during the simulations**
During a simulation the user is informed about various aspects. These elements have to be considered by the user, analogous to a real trader acting in the real market. During the simulations, trading activity is processed ***instantly***, as much as market dynamics are processed on a ***real-time*** basis.

▪ **Transaction log**
All transactions that you conclude are reflected in the transaction log. If desirable, scroll up/down. At the start, the log is empty. Both purchases and sales are reported. The product, the volume and the price level are shown; next, the time stamp is made visable.

▪ **Position reporting**
Positions are updated with immediate effect on the basis of actual transactions. Note that long positions are indicated by a positive number, while short positions are reflected by a negative number.

▪ **Working capital**
Your working capital is allocated (automatically) to pay transaction cost (e.g. broker fees, exchange fees, clearing fees) and to capitalise your exposures (e.g. initial margin, variation margin), as well as to finance realised losses.

- **Brokerage fee**
A brokerage fee has to be paid for every deal concluded via a broker (typically in the OTC market). After all, the broker provides a service (e.g. it offers mediation services), which brings a cost. In the trading simulations, the fee is per unit (and, thus, per contract).

- **Exchange fee**
An exchange fee has to be paid for every deal concluded at an exchange. After all, the exchange provides a service (e.g. it offers a trading platform, it has to process orders and transactions), which brings a cost. In the trading simulations, the fee is per unit (or per contract).

- **Clearing fee**
A clearing fee has to be paid for every deal that is cleared. After all, the clearing house (i.e. the central counterparty, or CCP) has to process transactions and manage counterparty risk arising from transactions, which brings a cost (amongst others, the clearing staff members have to be paid salary). In the trading simulations, the fee is per unit (or per contract).

- **Initial margin**
An exposure arises upon the opening of a position. As the clearing organisation guarantees settlement, but is exposed to counterparty risk, it requires members of the exchange to pledge cash collateral as a deposit (margin).
In case of a default, the initial margin is to back potential losses, which may occur in the period between the moment of default and the moment of unwinding the position (close-out). This is why initial margin is typically is based on market volatility. Next, it also explains why initial margin is deposited by both market participants (both buyer and seller).

    *Note:*
    *In the simulations, in case of an outright position, the initial margin per contract is pre-set (like, in reality, the clearing house typically fixes it and may reconsider periodically).*

    *Note: re "Cross-margining NOT in place":*
    *In the simulations, in case of opposing positions (i.e. spreads) cross-margin is not in place. This implies that the calculation of the margin does not take into account that opposing positions (one contract long, and another contract short) lead to a lower market risk (risk offset). A lower exposure could lead to a discount for the combination of the two (or more) margin requirements, instead of the sum of both futures positions. However, once again, here such an offset is not incorporated in the calculation of the margin requirements. However, please note that with the (value-at-)risk (VaR) calculation (see below), the offset is taken into account.*

- **Variation margin**
If you have a position, as soon as the market (price) changes adversely, you are required to deposit variation margin, equalling the unrealised loss on the position. This amount of money (mark-to-market) is automatically transferred from your account to the margin account at the clearing organisation.

    *Note:*
    *In reality, margining may concern a daily process, with overnight adjustments; in the simulation, real-time margining is applied.*

- **Unrealised result**

The "Unrealised result" indicates the actual (gross) unrealised result of the open position(s) (i.e. mark-to-market result), not taking into account any transaction costs.

- **Realised result**
  The "Realised result" indicates the (gross) financial result of the closed (liquidated) position(s), ignoring transaction costs.

- **Net. Liq. value**
  The "Net liquidation value" reflects the value that would be left if all open positions would be liquidated at the current price levels in the market. In other words, it concerns the value of the existing (or open) position(s) at the actual market prices. It can be calculated by considering the working capital at the start, plus the realised and unrealised results, and taking into account all incurred transaction costs (as these concern sunk costs), plus the initial margin and variation margin deposits (as the deposits will be handed back in case of position liquidation).

- **VaR**
  The value at risk (VaR) reflects your market (price) risk (and, thus, your exposure) in a quantified manner. Once you open a position, a value at risk number arises. Obviously, upon position liquidation, the VaR becomes zero (again). Analogously, partial liquidation will (only) lower the VaR.

  > *Note:*
  > *In reality, the VaR calculation includes price volatility number. After all, the lower the price volatility, the lower the market risk. To mimic this in the the simulations, the VaR is based on a percentage of the contract value. As the market price changes, this value moves accordingly. Hence, the value at risk (VaR) is indicated on a real-time basis.*

  > *Note, re "Correlation (risk offset): +0.95":*
  > *The (value-at-)risk calculation in the simulation takes into account whether two futures positions are opposing each other, or not, and, thus, whether a risk off-set applies. This does take place when a long futures position is combined with a short futures position, as long as the price correlation between these two products is positive. The offset will lead to a reduction of the exposure. This significance of this effect is dependent on the significance of the correlation coefficient between the two prices of the products or contracts. In this case, a correlation coefficient of +0.95 is applied (indicating a very strong price relationship).*

## Post-trade reporting

At the end of a trading simulation, you will be reported on your performance, financially and non-financially. Download the PDF file that becomes available and save it in your own database in an environment that you control yourself (note that Entrima does not save it).

- **Transaction log**
  All transactions that you conclude are included in the transaction log. If desirable, scroll up/down.

- **Position**
  After market closure, you may have a flat position (meaning: no open position) or you are left with a position (open position).
  Open positions are valuated against closing/settlement prices. On this basis, mark-to-market valuation takes place and margin requirements are effectuated. This is why with an open position capital is still allocated by the relevant clearing organisation. (Nevertheless, it just

concerns a temporarily allocation of capital, so the money is not gone.)

- **Performance**
  As soon as you have finished your simulation, you are provided with a PDF file showing an overiew with financials, including result (e.g. realised P/L, unrealised P/L), margin (e.g. initial, variation), transaction fees and actual working capital. This way, you are provided the opportunity to analyse your performance.
  Mind that you may have left (an) open position(s); this will impact the numbers reflected. After all, with an open position capital is still allocated by the relevant clearing organisation. (Nevertheless, it just concerns a temporarily allocation of capital, so the money is not gone.)

- **Quote request**
  In case the simulation includes quote requests, then, at the end of the simulation, you'll be reported on your performance. To assess your performance the following rules are considered:

  ➢ YOUR BID price must be lower than YOUR ASK price.
  ➢ YOUR BID > ACTUAL/MARKET BID minus the ACTUAL/MARKET Bid-Ask Spread (at the moment of submission).
  ➢ YOUR ASK < ACTUAL/MARKET ASK plus the ACTUAL/MARKET Bid-Ask Spread (at the moment of submission).

- **Assessment**
  In case the simulation includes an assessment, then, at the end of the simulation, you'll be reported on your performance. For the assessment of your performance the following rules are considered:

  ➢ In case of multiple choice questions only one answer will be considered correct.
  ➢ In case of open questions your answer is not allowed to deviate moe than 5% of the actual number/price/value.
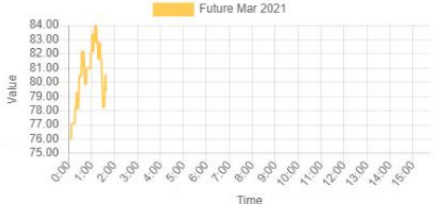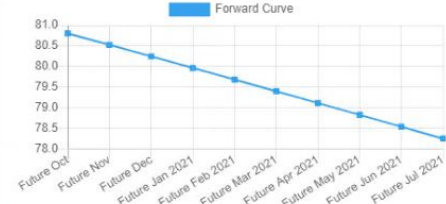
### Forward curve



### Bought

| | | |
|---|---|---|
| 1x | **Future Nov** 82.65 per unit | 00:51:20 |
| 2x | **Future Nov** 82.70 per unit | 00:38:40 |
| 5x | **Future Oct** 79.46 per unit | 00:19:20 |

### Sold

| | | |
|---|---|---|
| 1x | **Future Oct** 82.84 per unit | 00:54:40 |
| 3x | **Future Oct** 82.84 per unit | 00:48:00 |
| 4x | **Future Nov** 81.95 per unit | 00:28:80 |

| Product | Qty | Bid | Ask | Qty | Position |
|---|---|---|---|---|---|
| **Future Oct** | 3 | 77.84 | 78.04 | 15 | 1 |
| **Future Nov** | 6 | 77.74 | 77.94 | 20 | -1 |
| **Future Dec** | 20 | 77.63 | 77.83 | 10 | 0 |
| **Future Jan 2021** | 18 | 77.52 | 77.72 | 5 | 0 |
| **Future Feb 2021** | 16 | 77.41 | 77.61 | 8 | 0 |
| **Future Mar 2021** | 4 | 77.29 | 77.49 | 1 | 0 |
| **Future Apr 2021** | 13 | 77.18 | 77.38 | 6 | 0 |
| **Future May 2021** | 17 | 77.06 | 77.26 | 19 | 0 |
| **Future Jun 2021** | 11 | 76.94 | 77.14 | 19 | 0 |
| **Future Jul 2021** | 1 | 76.81 | 77.01 | 4 | 0 |





### Financial statement

| | |
|---|---|
| Working capital | 593.43 |
| Exchange fees | 0.06 |
| Clearing fees | 0.06 |
| Initial margin | 15.00 |
| Variation margin | 2.77 |
| Unrealized P/L | 2.77 |
| Realized P/L | 11.32 |
| Liquidation value | 613.97 |

### Risk report

| | |
|---|---|
| Correlation (risk offset) | 0.95 |
| Value at Risk | 0.03 |

*THE LEADER IN COMMODITY & ENERGY MARKET EDUCATION*

---

**Entrima Trading Simulation - 1 Future**

ENTRIMA — THE EUROPEAN INSTITUTE FOR ENERGY TRADING & RISK MANAGEMENT

Pete Johnson
04:12:62
Time remaining

Bought Oil for $99.13 at 04:21:48

Sold Oil for $102.61 at 04:29:37
Sold Oil for $105.21 at 04:31:64
Sold Oil for $105.44 at 04:33:31

Bought Oil for $104.70 at 04:36:68
Bought Oil for $102.74 at 04:37:29

**Total position:** 0

| Bid | Ask |
|-----|-----|
| 94.72 | 94.82 |

**Financial statement**

| | |
|---|---|
| Working capital | 506.39 |
| Exchange fees | 0.30 |
| Clearing fees | 0.30 |
| Initial margin | 0.00 |
| Variation margin | 0.00 |
| Unrealized P/L | 0.00 |
| Realized P/L | 6.99 |
| Net liq value | 506.39 |

**Risk report**
VaR 0.00

**News flash:**

[00:35] The United States of America have given out a huge subsidy on all electric cars. This will influence oil demand straight away. 'Cash for Gas' program has just been announced by president Obama.

[00:23] China said to have increased it's own oil production to become less dependent on imports.

[00:11] Saudi Arabia's largest oil field (Ghawar) just faced an explosion and now production has stopped. The cause is still unknown and therefore investigated.

---

ENTRIMA — THE EUROPEAN INSTITUTE FOR ENERGY TRADING & RISK MANAGEMENT

Ashraf - Enovos
07:22:81
Time remaining

Bought 1 BFO 6M for $102.90 per unit at 01:08:23

Sold 5 BFO 2017 for $101.63 per unit at 08:43:33

Bought 1 BFO 3M for $104.14 per unit at 00:40:65

Sold 3 BFO 2016 for $102.40 per unit at 09:01:47

| Product | Qty | Bid | Ask | Qty | Position |
|---------|-----|-----|-----|-----|----------|
| BFO 1M | 9 | 94.11 | 94.16 | 14 | 0 |
| BFO 2M | 5 | 94.70 | 94.75 | 17 | 1 |
| BFO 3M | 1 | 95.29 | 95.34 | 12 | 3 |
| BFO 6M | 11 | 95.88 | 95.93 | 16 | 1 |
| BFO 9M | 17 | 96.47 | 96.52 | 20 | 0 |
| BFO 2016 | 6 | 97.05 | 97.10 | 20 | -3 |
| BFO 2017 | 12 | 97.64 | 97.69 | 2 | -5 |
| BFO 2018 | 19 | 98.23 | 98.28 | 18 | 0 |
| BFO 2019 | 16 | 98.82 | 98.87 | 14 | 0 |
| BFO 2020 | 15 | 99.41 | 99.46 | 9 | 0 |

**Financial statement**

| | |
|---|---|
| Working capital | 382.76 |
| Exchange fees | 0.65 |
| Clearing fees | 0.65 |
| Cross-margining not in place | |
| Initial margin | 72.40 |
| Variation margin | 43.54 |
| M-to-M | -7.99 |
| Realized P/L | 0.00 |
| Liquidation value | 490.71 |

**Risk report**
Correlation (risk offset) +0.95
Value at Risk 9.47

**News-flash:**

[02:18] The Taliban is interrupting the oil transport in Iraq in a violent matter.

[01:50] The flexibility of oil producers is increasing; therefore there can be better anticipated on supply and demand.

[01:22] The United States of America has given out an huge subsidy on all electric cars. This will influence oil demand straight away. 'Cash for Gas' program has just been announced by president Obama.

[00:54] China said to have increased it's own oil production to become less dependent on imports.

[00:26] Russian press say an important oil production site exploded in Siberia. More news to come.

---

**Entrima Trading Simulation - Options**

Risk | General

**Sensitivity Analysis**

| Δ Delta | -1.94 |
| Γ Gamma | 0.34 |
| ϑ Vega | 0.24 |
| Θ Theta | -0.02 |
| Ρ Rho | -0.36 |

**Transactions**

Bought 1 Future EUA for €13.67 per unit at 02:41:19
Sold 1 Future EUA for €11.03 per unit at 05:50:20
Bought 1 Put EUA 14.00 for €3.28 per unit at 04:28:87
Bought 1 Put EUA 14.00 for €3.26 per unit at 04:27:86

Price — Delta

---

**Entrima Trading Simulation - Foreign Exchange**

ENTRIMA — THE EUROPEAN INSTITUTE FOR ENERGY TRADING & RISK MANAGEMENT

Sold GBP 1,000,000.00 for USD 1,470,500.00
Bought EUR 1,000,000.00 for GBP 850,200.00

Time remaining
14:46:90

**Currency accounts**

Euro account
31,000,000.00
Sterling account
28,149,800.00
Dollar account
31,470,500.00

EUR/GBP, Spot | EUR/USD, Spot | GBP/USD, Spot
EUR/JPY, Spot | GBP/JPY, Spot | USD/JPY, Spot
EUR/CHF, Spot | GBP/CHF, Spot | USD/CHF, Spot

---

**CONTACT**

Email : info@entrima.org
Web : www.entrima.org