

# QUANTS

## What We Offer

QUANTS offers the following services:

### Consulting on pricing and hedging of derivatives

for trading

Market making, arbitrage, structuration

for investment management

Security selection, portfolio optimization, risk diversification.

for risk control

Model validation, calibration of pricing parameters, optimization of the strategies' risk profile.

### Different operations

#### Commando

The operation takes from 3 to 20 working days. The objective is to meet an occasional demand of support or training.

#### Tactic

The operation takes from 20 to 60 working days. The objective focuses on a specific part of the client's development project.

#### Strategic

The operation takes more than 60 working days. The objective includes the entire client's project.

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### Examples of client projects

QUANTS supports its clients in their research and development projects.

#### Convertible bonds arbitrage

The project "Convertible bonds arbitrage" consisted of the implementation of systematic detection tools of arbitrage opportunities of over 800 convertible bonds.

Thanks to its competence, QUANTS has made a systematic process from the pricing process in implied volatility and implied credit spread of convertible bonds while respecting the constraints of computation time and data updating.

The developed tools allow traders to improve and rationalize their investment approaches.

#### Options Market Making

The project "options market making" consisted of studying the profitability of options market making strategies on shares belonging to several European indexes.

Thanks to its competences in pricing and its experience in data management, QUANTS has implemented a systematic back-testing tool of options market making strategies on tick data while considering the dynamic of the order book.

The developed tools allow traders to analyze the market liquidity and to detect the most interesting securities to process.

#### Model validation

The project "model validation" consisted of the testing of a pricing model of convertible bonds, describing a new dynamic of the underlying equity and credit with a link between equity and credit.

Thanks to its competences in modeling and back-testing, QUANTS has tested the model on a universe of convertible bonds and has verified the hedge ratios to the market reality.

The survey allows the client to prove the suitability of the new modeling under all market conditions.

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### **In-house projects**

In order to remain on the cutting edge of its field of expertise, QUANTS invests on its behalf in research and development projects.

### **Technology watch**

In the field of quantitative finance, technology watch is the monitoring of publications about new models. The access to new technologies of data management and programming is also a key-factor for future successful projects.

### **Back-testing**

QUANTS has developed a back-testing environment which applies to the following strategies:

#### **Optimal hedging of derivatives**

Based on the historical transactions of derivatives, adjustment strategies of the hedging with Greeks and hedge ratios are defined by the user, so that it is possible to systematically test the hedging strategy under conditions very similar to those of the market (transaction costs, slippage). The user obtains an analysis of the PnL's distribution which can now be decomposed according to the different risk factors and combined according to several predefined criteria.

#### **Trend following**

The user defines the quantitative indicators helping for the trend detection based on a list. He then defines the parameters of intra-strategy management rules (opening and closing of signals coming from the indicators) and inter-strategies (portfolio allocation rules). In this way, he can get a vision of the PnL which can be decomposed according to several risk factors and combined according to different predefined criteria.

#### **Mean-reverting process**

The user defines the type of basket he wants to get and the statistical test needed for the pre-selection of the baskets. He then defines the parameters of intra-strategy management rules (opening and closing of signals coming from the indicators) and inter-strategies (portfolio allocation rules). In this way, he can get a vision of the PnL which can be decomposed according to several risk factors and combined according to different predefined criteria.

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