

## DIRECTION DES RISQUES

### ENTREPRISE RISK MANAGEMENT – MARKET RISK MODELING

# QUANTITATIVE ANALYST MARKET RISK MODELLING STAGE 6M MARKET IMPACT & FUTURE HEDGING COSTS

#### CONTEXT

A major challenge for both banks and Hedge Funds is to deal with concentrated positions within portfolios, which can translate into dramatic impact costs. These costs are driven by a self-inflicted penalization on the market prices: intuitively due to limited market liquidity the price deteriorates as – when trading big volumes – the first shares are generally cheaper than the last purchased. Recent developments in the literature showed that prices scale proportionally to the squared root of the volume, reducing the profitability and increasing costs. Under the EBA reglementary requirements, banks should be able to liquidate their portfolios within 10 days. Whenever this is not achievable an AVA CP has to be estimated.

The second cost is represented by the future hedging costs of the *gedankenportfolio*. Indeed, for different reasons, its composition naturally changes in time, introducing some rebalancing costs as products need to be sold and bought constantly. This additional friction is called Future Hedging cost, and, again, enters within the costs the regulatory institutions demand to compute.

#### DESCRIPTION OF THE INTERNSHIP

The internship is divided into two parts that are intimately connected: (i) the estimation of AVA concentrated positions (CP) and (ii) the computation of Future Hedging costs associated to a certain *gedankenportfolio*, i.e. a general portfolio.

The aim of this internship is to construct two frameworks from existing ones - if any - taking advantage of recent developments in academic literature. The goal of the internship is to be able to steer the composition of the *gedankenportfolio* to limit the impact of these additional costs on the bank.

The intern will have the opportunity to work in a dynamic environment where they will become familiar with key aspects of investment banking, including:

- The various financial products available in both the exchange and over-the-counter markets.
- The different risk metrics and regulatory requirements.
- The statistical and mathematical models used in the field.

#### REQUIRED COMPETENCES

Candidates should demonstrate strong mathematical and programming skills, particularly proficiency in programming languages such as Python. While a deep understanding of various financial instruments is

not mandatory, candidates must exhibit a proactive attitude and the ability to learn new concepts efficiently and quickly. Proficiency in French is a plus.

All candidates will be subject to a written test. Notification of the date will follow the submission of the application.

### **#INCLUSIVE FINANCE**

As a Top Employer, we place our employees at the centre of our attention. Internal mobility, career development and training schemes enable you to grow and develop throughout your career. You'll work in an inclusive, collaborative environment that will give you every opportunity to succeed in your new role.

You'll also have the opportunity to make a commitment to society and the causes that are close to your heart via our corporate foundation.

You will receive a placement allowance based on your training and level of study, as well as reimbursement of 60% of your travel costs, one day's paid leave for each month worked and access to the company restaurant.

### **CONTACTS**

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