

# First Global Artificial Intelligence and Financial Case Analysis Challenge

## Announcement

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### I. Background & Objectives

With the rapid evolution of artificial intelligence, the financial industry is undergoing unprecedented transformation. To identify top-tier global talent in Financial Technology and quantitative analysis, and to promote the practical application of AI in the pricing of complex financial derivatives and risk management, the Global Association of Artificial Intelligence and Finance (GAAIF) is proud to announce the "First Global Artificial Intelligence and Financial Case Analysis Challenge."

This challenge focuses on authentic market environments and complex hedging requirements regarding exchange rates and commodities, utilizing a deep-dive case analysis approach. We seek individuals with exceptional financial modeling capabilities, programming proficiency, and innovative thinking to jointly explore new frontiers in financial engineering.

Successful participants will be awarded the honorary title of "**Analysis of Artificial Intelligence and Finance (AAIF)**" by GAAIF, recognizing their outstanding cross-disciplinary capabilities in AI and finance.

Note: There is **no registration fee** for this challenge.

### II. Case Details

This challenge is based on the risk management needs of a real multinational corporation. Participants must complete the assigned tasks based on the following background information.

#### 1. Company Background

Zeus Gold Group AG ("Z Group") is a transnational gold jewelry design and

manufacturing enterprise headquartered in Frankfurt, Germany, with production bases and retail networks across Europe, North America, and Asia. The Group procures substantial amounts of gold raw materials from London and Zurich annually, settled in US Dollars (USD), while its consolidated financial statements are reported in Euros (EUR). In recent years, affected by geopolitical conflicts, global inflationary pressures, and divergent monetary policies, gold price volatility has intensified significantly, and the EUR/USD exchange rate exhibits high uncertainty.

## **2. Risk Exposure & Requirements**

Since 2024, although the Euro has strengthened against the Dollar at times, Group management is concerned that future European economic weakness or USD strength due to interest rate differentials could cause the Euro to depreciate, thereby increasing the Euro cost of raw material procurement. Meanwhile, the LBMA gold spot price continues to oscillate at high levels, further complicating cost control.

To stabilize gold procurement costs for the next two years and partially hedge exchange rate volatility, Z Group aims to design a structured risk management product with a partner financial institution. The goal is to achieve dual risk mitigation while controlling hedging costs.

## **3. Partner Institution**

Alphabank S.A. ("A Bank") is a multinational bank headquartered in Paris, possessing a leading edge in precious metals and foreign exchange derivatives. To deepen strategic cooperation with Z Group, A Bank intends to tailor a combined derivative product that manages gold price risk, moderately hedges Euro depreciation risk, and minimizes option premiums.

## **4. Core Product Terms (Agreed by Parties)**

Product Type: Structured Forward Contract with Embedded Options.

Tenor: 2 years (from March 1, 2026, to February 28, 2028, inclusive of European Early Termination conditions).

- Notional Principal: EUR 500 Million.
- Early Termination Clause (Knock-Out): If the EUR/USD exchange rate (based on the reference rate published by the European Central Bank) falls below 1.05 or rises above 1.25 for the first time during the life of the product, the product will automatically terminate on that date.
- Settlement Formula: (Based on the LBMA Gold Spot USD Price (\$/oz) on the maturity or early termination date):

*Z Group's Payoff (EUR): Notional Principal × (P – K) / K*

*A Bank's Payoff (EUR): Notional Principal × (K – P) / K*

Note: P is the LBMA Gold Spot Price on the settlement date; K is the Strike Benchmark Price set at \$4,600/oz. Payoffs are settled in Euros; exchange rate risk is partially constrained by the Early Termination clause.

### **III. Task Requirements**

You will act as the Director of Product R&D at A Bank. You are required to submit a detailed product development proposal to the Bank's Product Committee. The proposal must cover at least the following two core sections:

- Product Design: Construct a pricing model for this structured financial product and elucidate the theoretical logic and pricing basis.
- Numerical Simulation: Perform a numerical simulation of the above pricing model using Python programming to verify the accuracy of the model.

### **IV. Participation Requirements**

1. Eligibility: This challenge accepts only individual participation; team participation is not permitted.

2. Submission Requirements: Participants must submit the following three documents by the deadline. Incomplete submissions will not be accepted.

- Document 1 (PDF): Product Proposal. This document must include the model design logic, theoretical derivation, charts/graphs, and analytical conclusions. Do not include Python code in this document.

- Document 2 (Source Code): Python source code file, saved in .py format.
- Document 3 (Data): Excel file containing the analysis data.

Note: All submitted materials must be **written entirely in English**.

3. Submission Method: Please package the above materials and send them to the official competition email: GAAIF@outmail.com.

4. Email Subject Format: "Challenge + Participant Name + City + Country". Example: Challenge+John Doe+New York+USA.

5. Deadline: February 18, 2026 (Wednesday), 12:00 Midnight EST (US Eastern Time).

#### 6. Data & Tools:

- Market data involved in the case analysis (e.g., historical exchange rates, gold price volatility) must be obtained independently via the internet or other legal means.
- The use of AI tools (such as GPT, Claude, DeepSeek, etc.) to assist in case analysis, proposal writing, and Python programming is permitted. However, the submitted proposal must reflect the participant's deep understanding of the underlying financial logic.

#### V. Scoring Criteria & Awards

1. Full Score: **100 points**.

- **Product Proposal (70 points)**: Judges will assess the proposal based on innovation, logical coherence, and presentation standardization.
- **Python Code (30 points)**: Judges will primarily evaluate the code's accuracy, execution efficiency, and readability.

2. Winning Criteria: Participants with a final score of **at least 75 points** will be declared winners.

3. Awards: Winners will receive the honorary title "Analysis of Artificial Intelligence and Finance (AAIF)".

The GAAIF looks forward to your participation as we jointly explore the infinite future of the deep integration of AI and finance!