

Structured Gold Forward Pricing Analysis

Zeus Gold Group AG & Alphabank S.A. - Product Valuation Update

Analysis Date: February 1, 2026 | GAAIF Challenge Submission

Executive Summary

The structured gold forward contract between Zeus Gold Group (Z Group) and Alphabank (A Bank) has experienced a **dramatic valuation reversal** due to significant market movements. Gold prices have surged to approximately \$4,900/oz while EUR/USD has strengthened to 1.19, fundamentally changing the product economics.

Z GROUP PRESENT VALUE	A BANK PRESENT VALUE	KNOCKOUT PROBABILITY	AVG. KNOCKOUT TIME
EUR +46.3M	EUR -46.3M	94.8%	0.61 years

 **Critical Market Alert:** EUR/USD at 1.19 is only 5% below the upper knockout barrier (1.25). Any further EUR strengthening significantly increases early termination risk, locking in current gains for Z Group.

 **Valuation Swing:** The product has shifted from a ~EUR 192M liability for Z Group to a ~EUR 46M asset - a total swing of approximately **EUR 238 million** in present value.

Current Market Conditions

GOLD SPOT PRICE

\$4,900/oz

+78% from original analysis

EUR/USD RATE

1.19

Near 4-year high

GOLD VOLATILITY

28%

Elevated (7%+ crash last week)

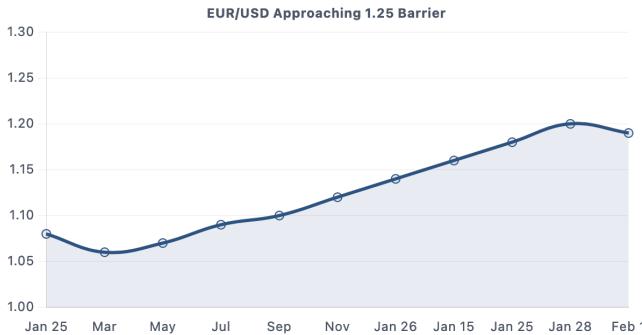
CORRELATION

-0.30

Gold/EUR-USD

Market Context

Gold reached a record high of **\$5,608/oz** on January 28, 2026, before experiencing a sharp 7%+ correction. The pullback was driven by profit-taking and dollar stabilization, but prices remain historically elevated around the \$5,000 psychological level. Meanwhile, EUR/USD has strengthened significantly on dollar weakness, approaching levels not seen since 2021.



Product Structure

Contract Terms

Parameter	Value
Notional Principal	EUR 500 Million
Strike Price (K)	\$4,600/oz
Tenor	2 years (Mar 2026 - Feb 2028)
Lower Barrier (EUR/USD)	1.05 (Knock-Out)
Upper Barrier (EUR/USD)	1.25 (Knock-Out)

Settlement Formulas

Z Group Payoff (EUR):

$$\text{Payoff}_Z = N \times \frac{P - K}{K}$$

A Bank Payoff (EUR):

$$\text{Payoff}_A = N \times \frac{K - P}{K}$$

Where: N = EUR 500M, K = \$4,600/oz, P = Gold spot at settlement

Current Intrinsic Value

GOLD ABOVE STRIKE

+\$300/oz

(+6.5% above K)

Z GROUP INTRINSIC

EUR +32.6M

If settled today

A BANK INTRINSIC

EUR -32.6M

If settled today

Barrier Proximity Analysis

Lower Barrier (1.05)

1.05

Current: 1.19

Upper Barrier (1.25)

1.25

Distance to lower: 11.8% | **Distance to upper: 5.0%**

Pricing Model Framework

Two-Factor Correlated GBM Model

The product is priced using a Monte Carlo simulation with two correlated geometric Brownian motion processes under the risk-neutral measure:

Gold Price Dynamics:

$$\frac{dS}{S} = (r_{USD} - q) dt + \sigma_S dW^S$$

where q = gold convenience yield

EUR/USD Dynamics:

$$\frac{dX}{X} = (r_{EUR} - r_{USD}) dt + \sigma_X dW^X$$

Interest rate differential drives FX drift

Correlation Structure:

$$dW^S \cdot dW^X = \rho dt$$

Implemented via Cholesky decomposition: $W^X = \rho W^S + \sqrt{1-\rho^2} Z$

Model Parameters

Parameter	Symbol	Value	Source/Rationale
Gold Spot	S_0	\$4,900/oz	LBMA, Feb 1, 2026
EUR/USD Spot	X_0	1.19	ECB Reference Rate
EUR Risk-Free Rate	r_{EUR}	2.5%	ECB Deposit Facility
USD Risk-Free Rate	r_{USD}	4.25%	Fed Funds Target
Gold Volatility	σ_S	28%	Elevated due to recent 7%+ move
EUR/USD Volatility	σ_X	10%	1Y implied volatility
Correlation	ρ	-0.30	Historical estimate (negative in crisis)
Gold Convenience Yield	q	0.3%	Gold lease rate

🎲 Monte Carlo Simulation Results

Z GROUP PRESENT VALUE

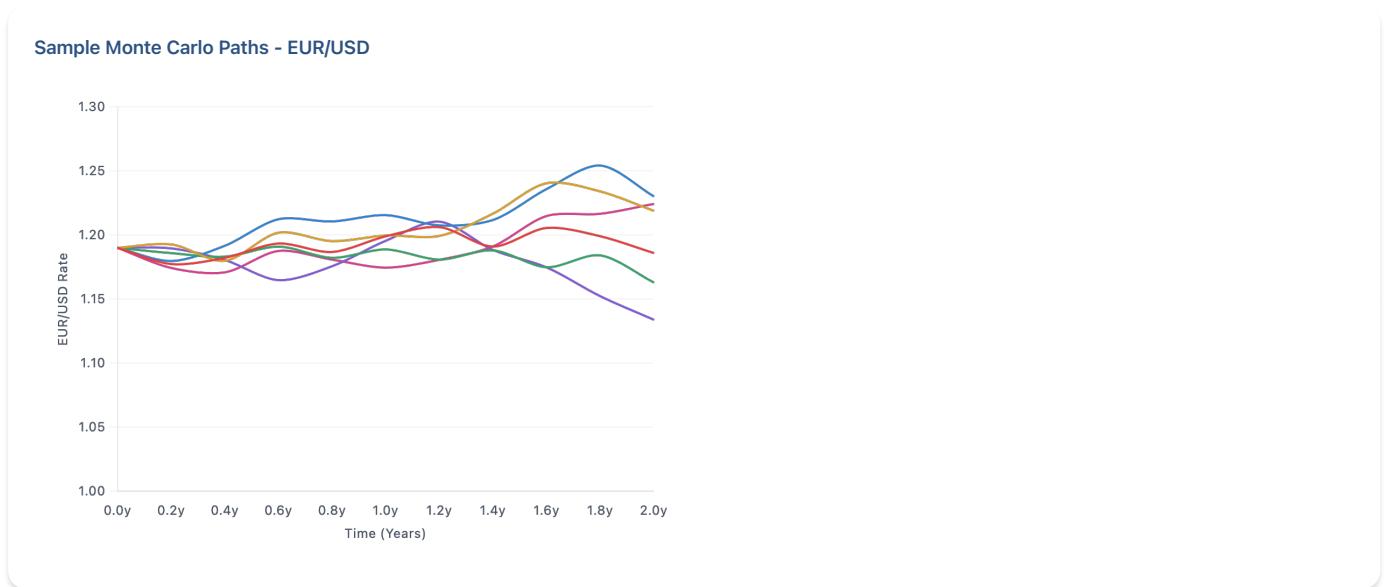
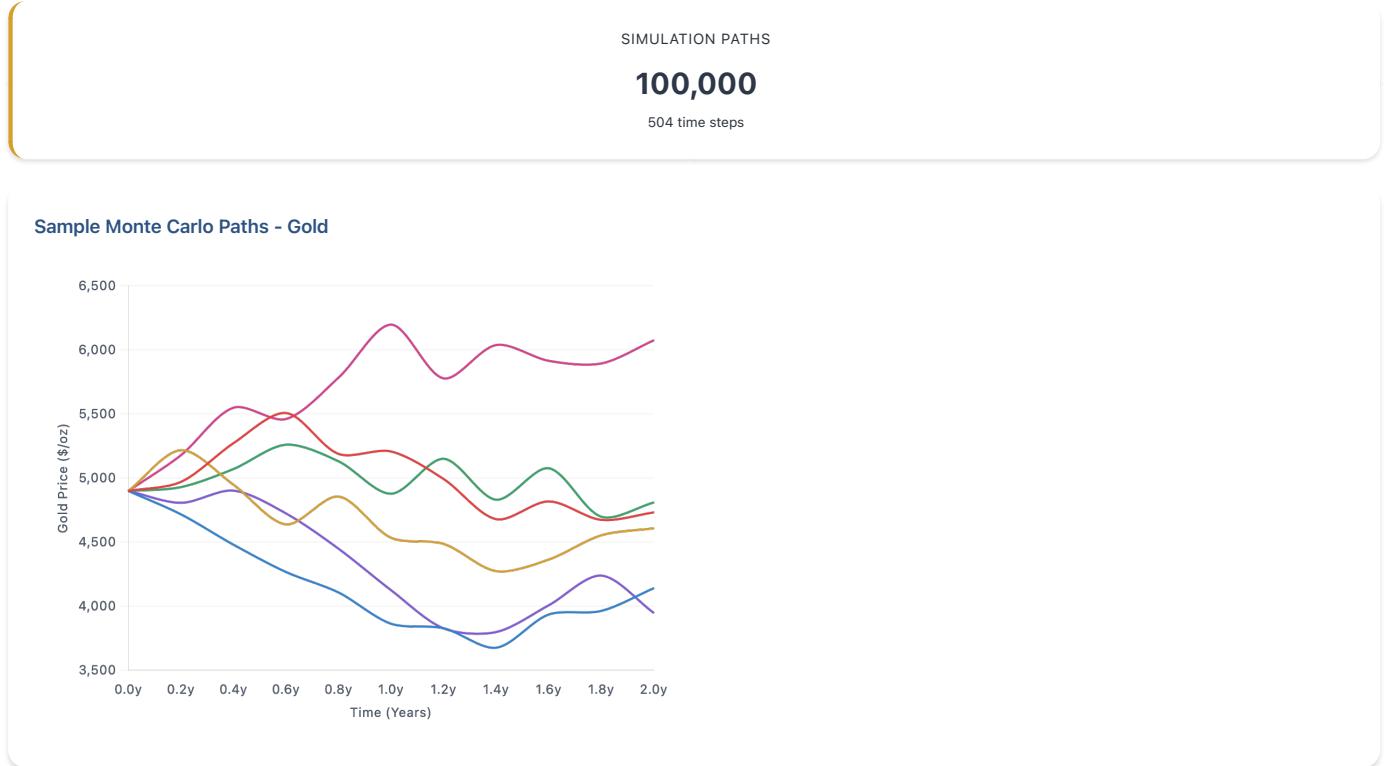
EUR +46.3M

95% CI: [45.5M, 47.1M]

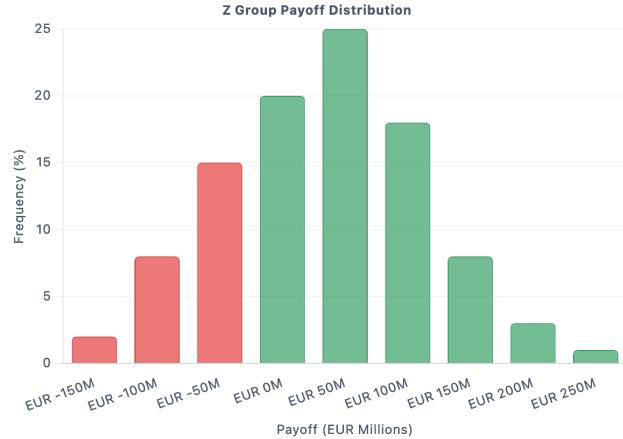
A BANK PRESENT VALUE

EUR -46.3M

Mirror position



Payoff Distribution



Knockout Analysis

KNOCKOUT RATE

94.8%

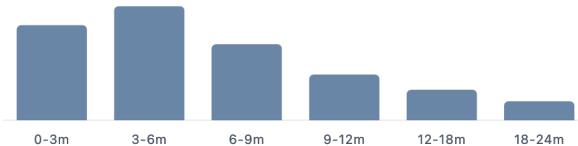
AVG KO TIME

0.61 yrs

Barrier Breach Distribution

Upper Barrier (1.25)	59.9%
Lower Barrier (1.05)	34.8%

Knockout Time Distribution



⇒ Valuation Change Analysis

Previous Assessment

Gold: \$2,750 | EUR/USD: 1.08

Z GROUP PV

EUR -192M

A BANK PV

EUR +192MLower barrier breaches: **85.7%****Current Assessment**

Gold: \$4,900 | EUR/USD: 1.19

Z GROUP PV

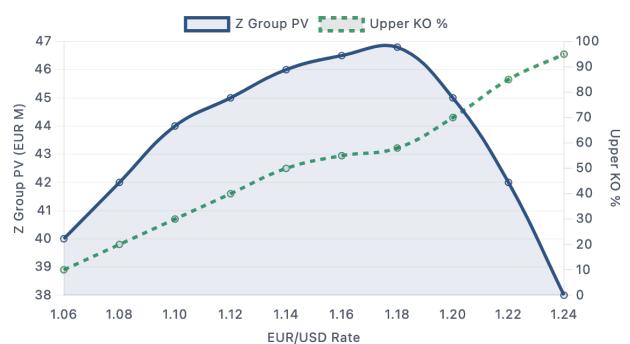
EUR +46M

A BANK PV

EUR -46MUpper barrier breaches: **59.9%**

- ✓ **Total Valuation Swing:** Approximately **EUR 238 million** in favor of Z Group. The contract has transformed from a significant liability to a valuable asset.

💡 Scenario Analysis

Impact of Market Movements on Z Group PV**Gold Price Sensitivity****EUR/USD Sensitivity**

Volatility Impact Analysis

Gold Vol	EUR/USD Vol	Z Group PV (EUR)	Knockout Rate	Upper KO	Lower KO
20%	8%	EUR 52.7M	83.4%	51.9%	31.5%
25%	9%	EUR 49.7M	89.7%	56.0%	33.7%
28%	10%	EUR 47.3M	93.8%	59.0%	34.8%
32%	11%	EUR 45.1M	96.5%	61.2%	35.3%
35%	12%	EUR 43.4M	98.0%	62.7%	35.4%
40%	14%	EUR 40.1M	99.5%	64.4%	35.1%

Key Insight: Higher volatility increases knockout probability, which generally reduces Z Group PV as settlements occur earlier when gold may not have appreciated as much.

△ Risk Sensitivities (Greeks)

DELTA (GOLD)

EUR 110K

per \$1 gold move

DELTA (EUR/USD)

EUR -101M

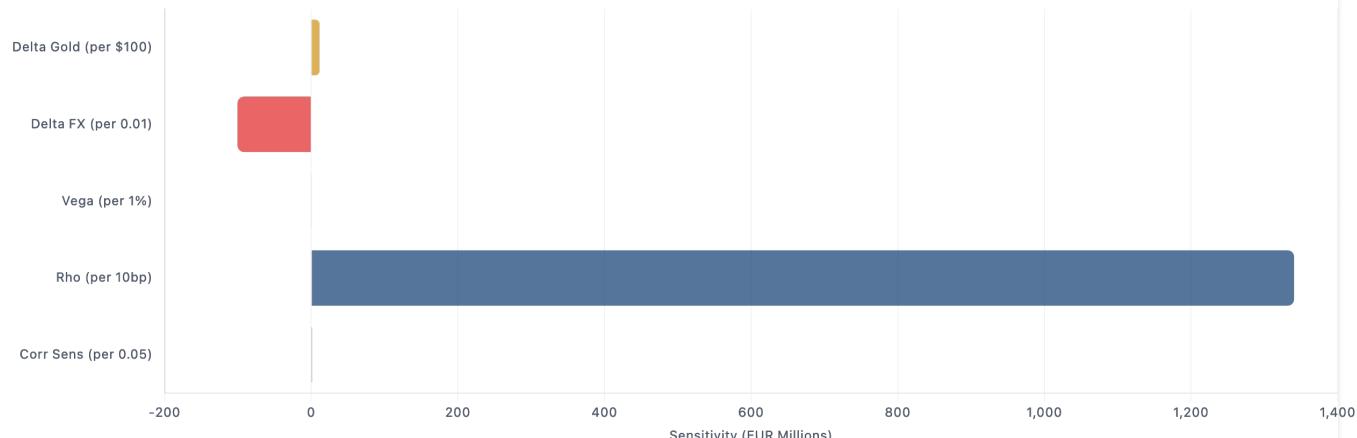
per 0.01 FX move

VEGA (GOLD VOL)

EUR 698K

per 1% vol change

Greeks Interpretation



Risk Factor Analysis

Greek	Value	Interpretation
Delta (Gold)	EUR 109,827/\$1	\$100 gold move = ~EUR 11M PV change
Gamma (Gold)	EUR 172.50	Convexity exposure to gold
Delta (FX)	EUR -100.6M/0.01	Extremely sensitive to EUR/USD moves
Vega	EUR 697,911/1%	Higher vol = more knockouts
Rho (EUR)	EUR 134M/1bp	Sensitive to EUR rate changes
Correlation	EUR 1.2M/0.05	Modest correlation sensitivity

Key Risk Observations

⚠ **FX Delta Dominates:** The EUR -100M per 0.01 FX move is the largest risk factor. With EUR/USD only 5% from the upper barrier, small FX moves have outsized impact.

⚠ **Path Dependency:** Due to the knockout feature, the product exhibits strong path dependency. Greeks provide only local sensitivities and may change rapidly.

ⓘ **Hedging Consideration:** A Bank would need approximately 110K oz of gold exposure and significant EUR/USD hedges to delta-neutral this position.

Conclusions & Recommendations

Z Group Perspective

- ✓ Product has become a **EUR 46M asset** from a EUR 192M liability
- ✓ Gold well above strike provides intrinsic value protection
- ✓ EUR/USD strength toward 1.25 would trigger knockout and lock in gains
- ⚠ **Risk:** Severe gold crash combined with EUR weakness could still result in losses

A Bank Perspective

- ✗ Facing **EUR 46M mark-to-market loss** on this position
- ✗ ~95% probability of early knockout limits potential recovery
- ⚠ Recent 7% gold correction helped, but insufficient to restore position
- **Options:** Consider early termination negotiation or restructuring

Final Assessment

The structured gold forward contract has experienced a **fundamental shift** in economics due to the unprecedeted gold price rally and EUR/USD strengthening. The contract tenor extends to February 2028, but with a ~95% **knockout probability** and average knockout time of **0.61 years**, early termination is highly likely.

The key risk factor going forward is the **EUR/USD barrier proximity**. At 1.19, the exchange rate is only 5% below the 1.25 upper knockout level. Any continuation of EUR strength would trigger termination and crystallize Z Group's gains at current gold levels.

GAAIF Challenge 2026 - Structured Gold Forward Pricing Analysis

Analysis performed using Monte Carlo simulation with 100,000 paths

Market data as of February 1, 2026