

## Worst-of Autocallable Certificate

### 1. Termsheet

<b>Notional</b>	EUR 1 000
<b>Valuation date <math>T_0</math></b>	31 Dec 2024
<b>Settlement currency</b>	EUR
<b>Maturity date</b>	15 Feb 2026 ( $T = 1.13$ years)
<b>Underlyings</b>	<b>1. Equity index, <math>S_t</math>:</b> S&P 500 (ticker: ^GSPC). <b>2. Short-rate, <math>r_t</math>:</b> Euro short-term rate (€STR) (modelled as a one-factor short-rate process).
<b>Initial levels on <math>T_0</math></b>	$S_0 = 5,881.63$ (Index level). $r_0 = 2.90\%$ .
<b>Knock-out observation dates</b>	2 Jun 2025 and 2 Dec 2025 (following-business-day convention, TARGET2 calendar).
<b>Knock-out barriers</b>	Equity barrier, $B_S = 95\% * S_0 = 5,587.55$ . Short-rate barrier, $B_r = 95\% * r_0 = 2.76\%$ .
<b>Autocall payoff</b>	On an observation date, if <b>both</b> underlying levels $\geq$ their barrier, the note redeems at 100 % of notional and terminates. Otherwise, it continues.
<b>Final payoff and conditional coupon</b>	At maturity, the noteholder receives: <ul style="list-style-type: none"> <li>A conditional coupon of 15% of notional (i.e. notional + coupon = 115% of notional) if <math>S_T \geq B_S</math> and <math>r_T \geq B_r</math>.</li> <li>Otherwise, the note redeems at notional multiplied by the poorer performance of the two underlyings.</li> </ul> $\text{Payoff at } T = N * \begin{cases} 1.15, & \text{if } S_T \geq B_S \text{ and } r_T \geq B_r \\ \min\left(\frac{S_T}{S_0}, \frac{r_T}{r_0}\right), & \text{otherwise} \end{cases}$

<b>Notional</b>	EUR 1 000
<b>Discounting curve</b>	Flat risk-free rate: $r_f = 3.60\%$ (continuously compounded, act/365).
<b>Equity volatility</b>	$\sigma_S = 15\%$ (annualized).
<b>Asset correlation</b>	$\rho = 0.00$ (applied to Brownian drivers).
<b>Short-rate model parameters (HW)</b>	$\kappa = 0.5602$ , $\theta = 4.32\%$ , $\sigma_r = 0.92\%$ .
<b>Day-count / convention</b>	act/365 fixed for both accrual and discounting.

---

[https://github.com/clementillig/Knockout\\_Barrier\\_Valuation](https://github.com/clementillig/Knockout_Barrier_Valuation)

---