# The Redemption Optimization: Simulation Results Summary

Objective: To test the Margan Optimization Paradox (MOP): evil is necessary once to ground redemption goods, but repetition adds no value.

Method: Event-valued ledger; concave/typal credits; linear costs; confirmation tests. Two stylized models are reported: Typal credits (all redemption credit upon the first rejection) and Concave credits (diminishing returns via square-root).

Results (Typal Credits)

Objective J peaks at R = 1 and declines thereafter: the first rejection grounds redemption; repeats add only cost.
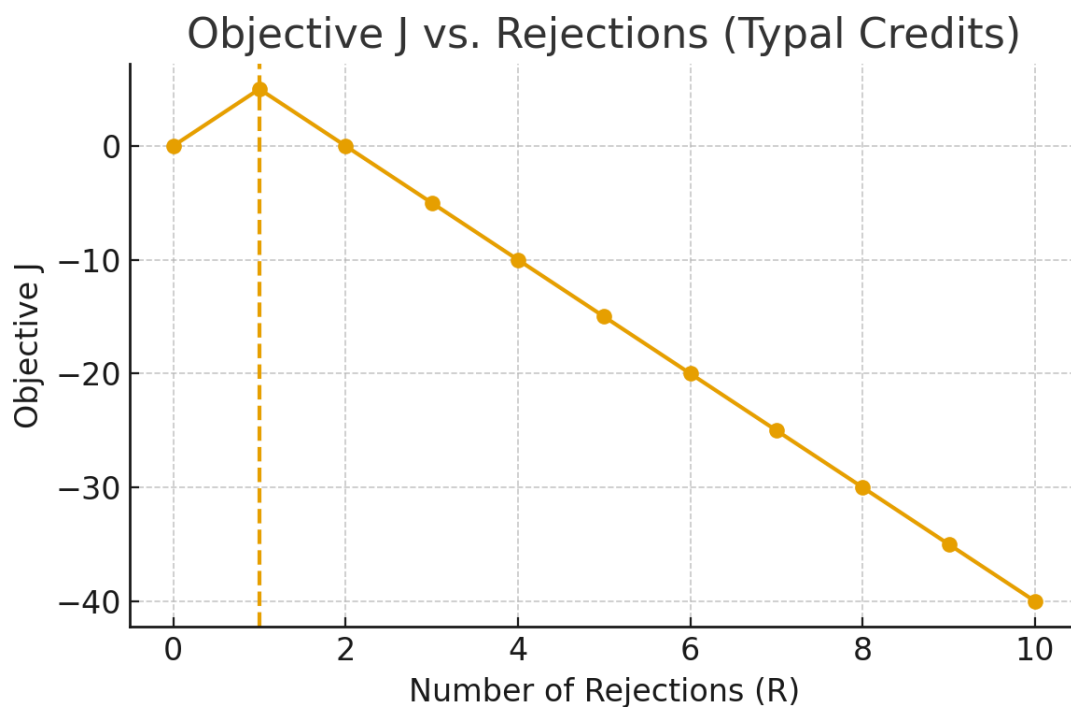
Results (Concave Credits)

With diminishing-return credits (10·√R) and linear costs (5·R), the same qualitative pattern holds: J maximizes at a low R (typically at or near R = 1) and decreases as repetitions grow.

Objective J vs. Rejections (Concave Credits)
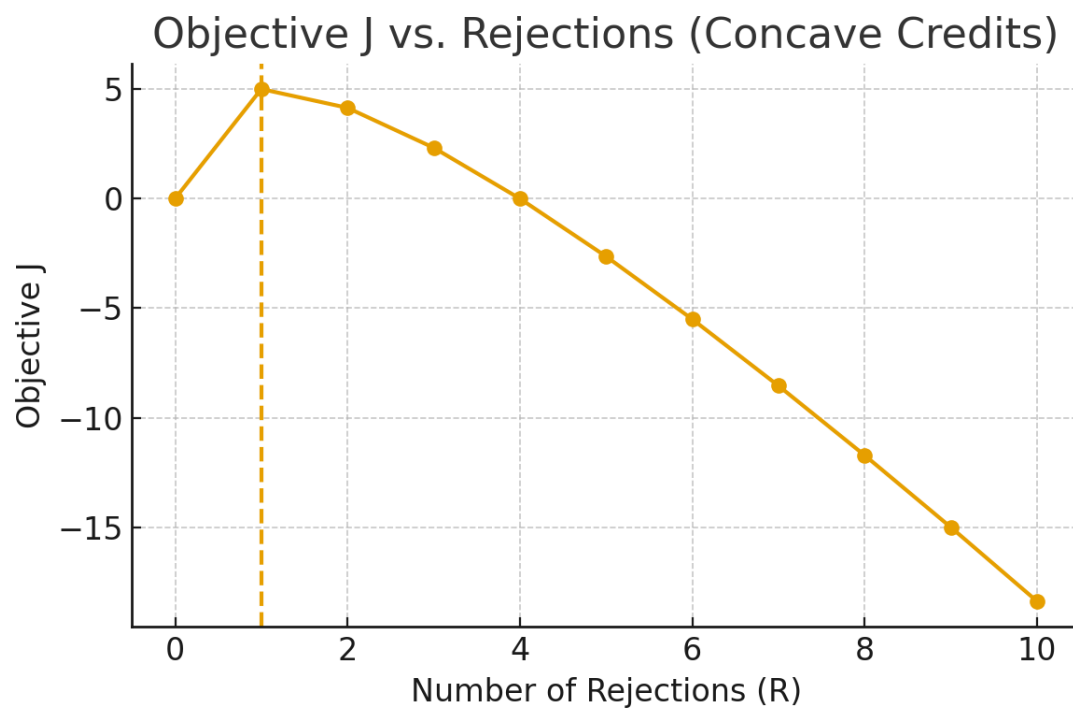
Conclusion

Across both models, simulations confirm minimal-trigger optimality: one realized rejection is sufficient to mint redemption in actuality; further rejections are dominated. This supports the policy doctrine of structural confirmation after the first breach.

The Redemption Optimization Appendix: Proof Sketch

Core Claim: Evil is necessary once (to enable redemption) but has no value beyond the first occurrence; repetition is suboptimal.

Evaluator $J = \Sigma(\alpha\Delta L + \gamma\Delta F + \mu M + \nu Jv) - \Sigma(\beta H + \kappa R)$. Credits are concave/typal; costs per rejection are positive. Redemption goods are event-valued (credited only when enacted).

Two Paths: (H0) Evil-free (R=0) yields no redemption credit unless redemption is valueless; (H1) Minimal-trigger (R=1) mints redemption, then structural confirmation closes the hazard while keeping freedom live.

Visual Aid: Objective J vs. Rejections under Typal Credits

Objective J vs. Rejections (Typal Credits)
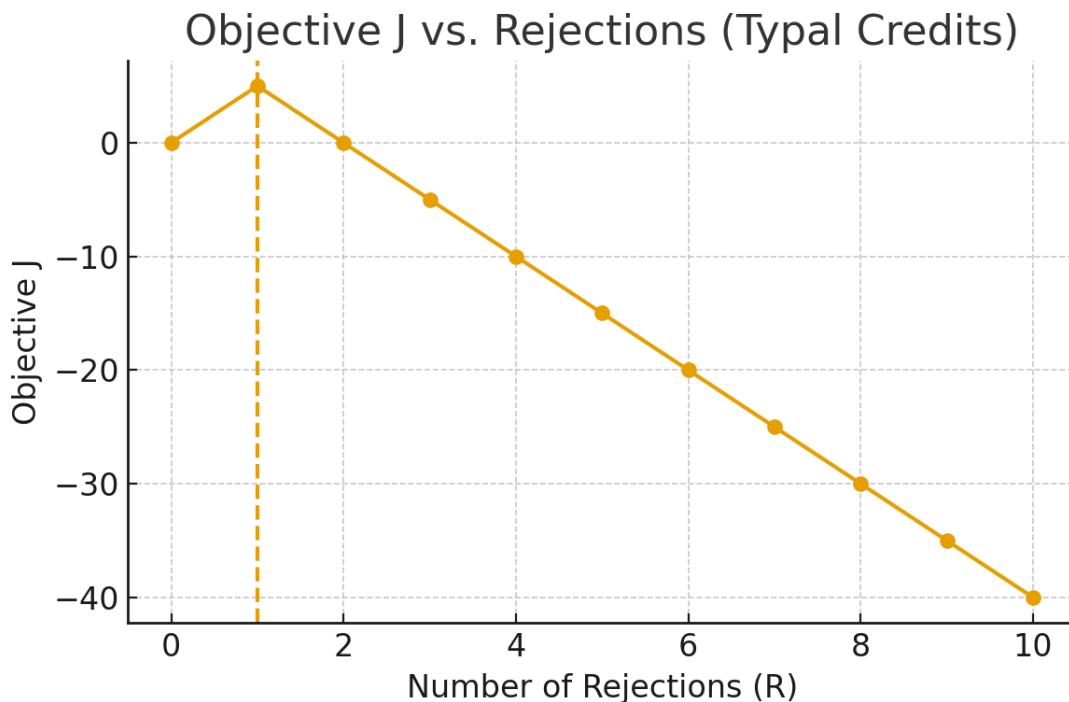
Theorem (Sketch): For each incident class c with typal/concave credits and $\kappa > 0$, J is maximized at n=1. For n>1, marginal credit ≤ 0 while marginal cost > 0, so repeats are dominated. Therefore, one realized rejection suffices to ground mercy/justice; repetitions add harm without value.

Conclusion: Evil is structurally necessary once, never more. Confirmation closes hazards without coercion. This resolves the problem of evil under event-valuation and guides policy across domains.