T08

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The algorithm is exactly the same except we use

$$V(S(t_{i-1}), t_{i-1}) = \frac{B(t_{i-1})}{B(t_i)} E_Q\left(V(S(t_i), t_i) \mid \mathcal{F}_{t_{i-1}}\right) \cdot \underbrace{I(S(t_{i-1}) > B)}_{\text{added indicator function.}}$$

pull this out of $\mathbb{E}$ since interest is deterministic.

for down-and-out. *

Since $\tilde{V} + \hat{V} = V$ we can determine $\hat{V}$ by $V - \tilde{V}$.

* and of course we modify the payoff at $t = T$ accordingly.