It took me a little while to understand the problem and see what it wasn't trivial−that we are talking about the probability of being ahead of another strategy, independently of by how much, not about expected values.

Let $S(c, n)$ be the stake of a player using constant c after n coin flips. We have

$$S(c, n+1) = S(c, n) \times ((1-c) + c \times [2 \text{ or } 0.4])$$

The second factor is either $1 + c$ or $1 - 0.6c$.

Assume first that n is a large even number. There are $n + 1$ outcomes, whose probabilities are determined by a binomial expansion. Let us ask what value of c maximizes the expected value of the most probable outcome, in which there are $n/2$ heads and tails. In that case, the new stake is

$$S(c, n) = S(c, 0) \times ((1+c)(1-0.6c))^{(n/2)}$$

What value of c maximizes the value raised to the power? The value is $-0.6c^2 + 0.4c + 1$; its derivative is $-1.2c + 0.4$ and the latter is 0 when $c = 1/3$ (the second derivative is negative, so this is a maximum).

So $c_{\max} = 1/3$ wins for the outcome for equal numbers of heads and tails. For outcomes with fewer heads than tails, there are some number of $((1+c)(1-0.6c))$ ‘‘paired’’ factors, and some number of excess $(1-0.6c)$ factors. For outcomes with more head than tails, we have excess $(1+c)$ factors. The total probability of these sets of unequal outcomes are the same. If $c > c_{\max}$, than $c_{\max}$ wins all the former cases; if $c < c_{\max}$, $c_{\max}$ wins all the latter cases. Since $c_{\max}$ wins the ‘‘middle’’ case, it wins in a majority of cases.

For the case where n is odd, we consider the two middle cases, which have one excess head or tail, and thus one unpaired $(1+c)$ or $(1-0.6c)$ factor. For $c \neq c_{\max}$, the ratios $(1+c)/(1+c_{\max})$ or $(1-0.6c)/(1-0.6c_{\max})$ may exceed 1. However, since $c_{\max}$ maximizes $(1+c)(1-0.6c)$, the ratio of this for $c_{\max}$ to any other value of c exceeds 1. And this is raised to the power $\lfloor n/2 \rfloor$. As $n \to \infty$, this will exceed the single-term ratio, so, as n gets large, $c_{\max}$ wins for both middle terms. As before, $c_{\max}$ will win for either the rest of the cases with more or fewer heads, so it wins overall.

Obviously, since the expected value of a trial is positive, $c = 1$ maximizes the expected value, but it does not lead to the most-likely to dominate strategy.