$$E(n_t) = \sum_{n_t=0}^{n} n_t \cdot \binom{n}{n_t} p_t^{n_t} (1-p_t)^{n-n_t}$$

$$= n p_t .$$

$$EC(T) = \frac{\left[c_1 \sum_{t=1}^{T} E(n_t)\right] + \left[c_2 (n - E(n_T))\right]}{T}$$

$$= \left[c_1 n \sum_{t=1}^{T} p_t + c_2 n (1 - p_T)\right] / T$$

DEFINING T^* AS THAT VALUE FOR WHICH

$$EC(T^*) \leq EC(T^*-1) \text{ AND } EC(T^*) \leq EC(T^*+1)$$

ONE CAN OBTAIN T^* BY ENUMERATING $EC(T)$ VALUES FOR ALL VALUES OF T.

SAY IF $c_1 = 100$, $c_2 = 10$ AND $n = 50$ THEN

t	p_t	T	A $\sum_{t=1}^{T} p_t$	B $1 - p_T$	$EC(T) = (100A + 10B) \cdot \frac{50}{T}$	
1	0.05	1	0.05	0.95	725	
2	0.07	2	0.12	0.93	532.5	
3	0.10	3	0.22	0.90	516.7	← $T^* = 3$
4	0.13	4	0.35	0.87	546.3	
5	0.18	5	0.53	0.82	612.0	

An aside

Let r be a random variable with expected value $E(r)$ and variance σ^2.
Over n observations, let the values of r be $r_1, r_2, r_3, \ldots\ldots r_n$, then the average of the observations $\bar{r} = \frac{\sum r_i}{n}$; variance of $\bar{r} = \sigma^2/n$, and its expected value is $E(r)$. Hence only if $n \to \infty$ does $\bar{r}$'s variance $\to 0$ and $\bar{r}$ becomes $E(r)$.