`ECVar(x)`

`x` is a vector of observed values. We have parameters `a`, `N`, `T`, which in our implementation is fixed at 9 and `uselog` for the log transformation. Recall that we compute $g(x)$ is the coefficient of λ^x in $\log(a)+\sum_{i=0}^{N}\frac{(-1)^i}{i}\left(\frac{\lambda}{a}-1\right)^i$ for $x<$ `uselog`, and $g(x)=\log(x)$ for $x>$ `uselog`.

We compute the value `ECVar(x)` as $\sum_{i=1}^{n}h(x_i)$. We precompute the values of $h(x)$ for $0\leqslant x\leqslant$ `uselog`. We use a variant of Stirling numbers given by the recurrence

$$\left\{\begin{array}{c} i \\ 1 \end{array}\right\}=1$$

$$\left\{\begin{array}{c} 1 \\ i \end{array}\right\}=0$$

$$\left\{\begin{array}{c} i+1 \\ j \end{array}\right\}=j\left\{\begin{array}{c} i \\ j \end{array}\right\}+i\left\{\begin{array}{c} i-1 \\ j-1 \end{array}\right\}$$

These count the number of ways to partition a set of size i into j partitions of size at least 2.

We calculate coefficients $c_{i,j}$ by

$$c_{i,j}=\sum_{k=0}^{i}\sum_{l=0}^{j}\frac{1}{k(i-k)}\left\{\begin{array}{c} k+1 \\ l+1 \end{array}\right\}\left\{\begin{array}{c} i-k \\ j-l \end{array}\right\}$$

We compute the values s_i given by

$$s_0=1$$

$$s_i=\frac{(i+1)^2 s_{i-1}+2}{(i+1)(i+2)}$$

Next we compute coefficients given by

$$a_i=\sum_{j=0}^{i\wedge\frac{N+1}{2}} s_{i+1-j}\left\{\begin{array}{c} i+1-j \\ j \end{array}\right\}-c_{i+1-j,j}$$

Finally, we compute

$$h(x)=\sum_{j=1}^{N}\frac{a_j}{\prod_{i=1}^{j}(x+i)}$$