We plan to consider the non-negative, hence convergent martingale $(D_i^*(t), \mathcal{F}_t)$ where

$$D_i^*(t) = \frac{D_i(t)}{\prod_{k=i-1}^{t-1}\{1 + P_i'(k)\}}. \tag{1}$$

We tried to provide some upper and lower bounds of the denominator $\prod_{k=i-1}^{t-1}\{1 + P_i'(k)\}$ and arrived to the following theorem that gives upper and lower bounds to the asymptotic order of $D_i(t)$.