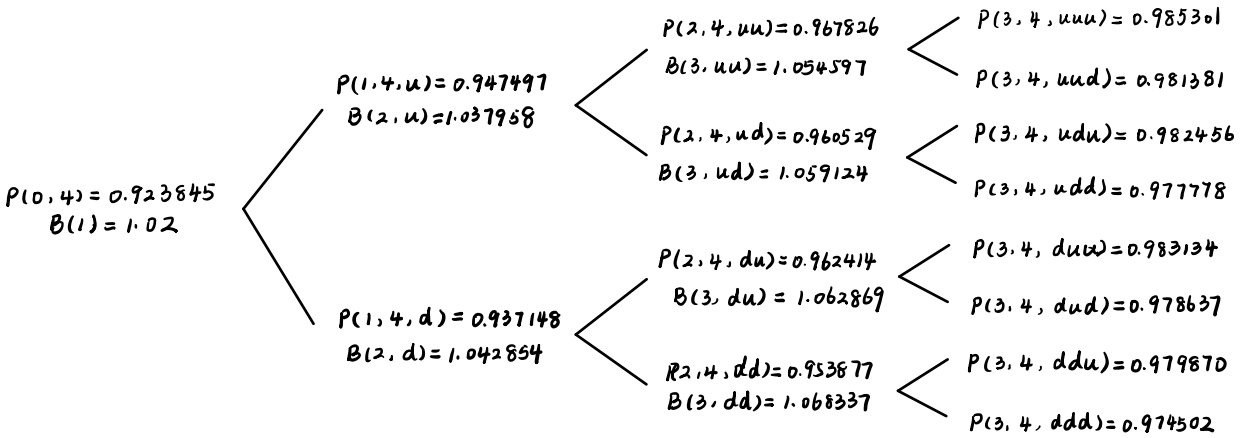
1,



$$
\begin{cases}
M(2,uu)B(3,uu) + N(2,uu)P(3,4,uuu) = 1 \\
M(2,uu)B(3,uu) + N(2,uu)P(3,4,uud) = 1 \\
M(2,ud)B(3,ud) + N(2,ud)P(3,4,udu) = 1 \\
M(2,ud)B(3,ud) + N(2,ud)P(3,4,udd) = 1 \\
M(2,du)B(3,du) + N(2,du)P(3,4,duu) = 1 \\
M(2,du)B(3,du) + N(2,du)P(3,4,dud) = 1 \\
M(2,dd)B(3,dd) + N(2,dd)P(3,4,ddu) = 1 \\
M(2,dd)B(3,dd) + N(2,dd)P(3,4,ddd) = 1
\end{cases}
$$

$$
\Downarrow
$$

$$
\begin{cases}
M(2,uu) = 0.94823 \\
M(2,ud) = 0.94418 \\
M(2,du) = 0.94085 \\
M(2,dd) = 0.93607 \\
N(2,uu) = 0 \\
N(2,ud) = 0 \\
N(2,du) = 0 \\
N(2,dd) = 0
\end{cases}
$$

$$\begin{cases} M(1,u)B(2,u)+N(1,u)P(2,4,uu)=M(2,uu)B(2,u)=0.98422 \\ M(1,u)B(2,u)+N(1,u)P(2,4,ud)=M(2,ud)B(2,u)=0.98002 \\ M(1,d)B(2,d)+N(1,d)P(2,4,du)=M(2,du)B(2,d)=0.98117 \\ M(1,d)B(2,d)+N(1,d)P(2,4,dd)=M(2,dd)B(2,d)=0.97618 \end{cases}$$

$$\Downarrow$$

$$\begin{cases} M(1,u)=041154 \\ M(1,d)=0.40142 \\ N(1,u)=0.57558 \\ N(1,d)=0.58451 \end{cases}$$

$$\begin{cases} M(1,u)B(1,u)+N(1,u)P(1,4,u)=M(0)B(0)+N(0)P(1,4,u)=0.9651 \\ M(1,d)B(1,d)+N(1,d)P(1,4,d)=M(0)B(0)+N(0)P(1,4,d)=0.9572 \end{cases}$$

$$\begin{cases} M(0)=0.2419 \\ N(0)=0.7634 \end{cases}$$

$$P(0,3)=M(0)B(0)+N(0)\ P(0,4)=0.9471$$

2,

$$\begin{cases} M(1,u)B(2,u) + N(1,u)P(2,4,uu) = 1 \\ M(1,u)B(2,u) + N(1,u)P(2,4,ud) = 0 \\ M(1,d)B(2,d) + N(1,d)P(2,4,du) = 1 \\ M(1,d)B(2,d) + N(1,d)P(2,4,dd) = 0 \end{cases}$$

$$\Downarrow$$

$$\begin{cases} M(1,u) = -126.82 \\ M(1,d) = -107.14 \\ N(1,u) = 137.04 \\ N(1,d) = 117.14 \end{cases}$$

$$\begin{cases} M(0)B(0) + N(0)P(1,4,u) = M(1,u)B(1,u) + N(1,u)P(1,4,u) = 0.4914 \\ M(0)B(0) + N(0)P(1,4,d) = M(1,d)B(1,d) + N(1,d)P(1,4,d) = 0.4919 \end{cases}$$

$$\Downarrow$$

$$\begin{cases} M(0) = 0.5372 \\ N(0) = -0.0483 \end{cases}$$

$$P(0,2) = M(0)B(0) + N(0)P(0,4) \approx 0.49$$