

$$\begin{aligned}
& P(B_2 > 0 \mid B_1 = 1) \\
&= P(B_2 - B_1 + B_1 > 0 \mid B_1 = 1) \\
&= P(B_2 - B_1 + 1 > 0 \mid B_1 = 1) \\
&= P(B_2 - B_1 > -1 \mid B_1 = 1) = P(B_2 - B_1 > -1) \\
&= P(B_1 > -1) = 1 - \Phi_{\text{norm}}(-1, 0, 1) = 0.8413
\end{aligned}$$

$$B_1 \sim \text{normal}(0, 1)$$

$$\begin{aligned}
(s < 1) \quad \text{COV}(B_s, B_n) &= \text{COV}(B_s, (B_n - B_s) + B_s) = \text{COV}(B_s, B_n - B_s) + \text{COV}(B_s, B_s) \\
&= 0 + \text{VAR}(B_s) = s
\end{aligned}$$